# UNIVERSIDAD COMPLUTENSE DE MADRID

## FACULTAD DE CIENCIAS ECONÓMICAS Y EMPRESARIALES

### Departamento de Comercialización e Investigación de Mercados


# TESIS DOCTORAL

## Green consumption: exploring the relation between environmental attitudes and purchase behaviour. The role of perceived risks and cultural values
## Consumo verde: estudio de la relación entre las actitudes medioambientales y el comportamiento de compra. El papel de los riesgos percibidos y de los valores culturales

MEMORIA PARA OPTAR AL GRADO DE DOCTOR

PRESENTADA POR

**Ana Carolina Baptista Afonso**

Directores

Diana Gavilán
Jesús García de Madariaga
Helena Martíns Gonçalves

**Madrid, 2016**

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PRESENTADA POR

**Ana Carolina Baptista Afonso**

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**Diana Gavilan, Jesús García de Madariaga,**

**Helena Martins Gonçalves**

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**TO UNIVERSE.**

> *Look again at that dot. That's here. That's home. That's us. On it everyone you love, everyone you know, everyone you ever heard of, every human being who ever was, lived out their lives. (…)To me, it underscores our responsibility to deal more kindly with one another, and to preserve and cherish the pale blue dot, the only home we've ever know.*

**Carl Sagan** ***in "Pale Blue Dot: A Vision of the Human Future in Space"***

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## Title:

Green Consumption: Exploring the relation between environmental attitudes and purchase behaviour. The role of perceived risks and cultural values.

## Introduction:

Population growth, exploitation of natural resources, climate change and other factors are putting the world on a development path that is not sustainable (KPMG, 2012).

The environmental awareness of consumers intensified greatly in last decades (Kalafatis et al., 1999).

Consequently, consumers have become more concerned with the environment and gradually have been changing their daily habits and buying patterns (Krause, 1993).

The organizations, trying to remain competitive, began to incorporate these new concerns in their green management and green marketing strategies (Straughan and Roberts, 1999; Chen and Chai, 2010; Rivera-Camino, 2007).

The decision-making process became increasingly complex with consumers adopting a greener lifestyle (Young et al., 2010).

Daily purchase decisions result often in tradeoffs between conflicting issues and end up in a dissonance between of attitudes and behavior. Consumers, despite being more conscious about the environment, are reluctant in translating it to purchases (Kalafatis et al., 1999; Barr et al., 2003; Gardyn, 2003; Hughner et al., 2007; Moisander, 2007; Kilbourne and Picket, 2008; Young et al., 2010).

This incongruence became an obstacle to marketing professionals (Wong et al., 1996; Crane, 2000; Mintel, 2006; Pickett-Baker and Ozaki, 2008; Albayrak et al., 2011).

Existing academic studies on the behavior of the "green consumer" and "green marketing" indicate that the phenomenon has not yet been sufficiently clarified (Ottman and Reilly, 1998; Ottman et al., 2006; Lee, 2008).

## Objectives:

This research aims to study the relationship between attitudes and pro-environmental purchase behaviour, taking into account the role of global perceived risks and cultural values.

The higher price of green products compared to regular products, due to the lack of economies of scale, is an important inhibitor of green consumption (Schlossberg, 1992; Sriram and Forman, 1993; Ottman, 1994; Mainieri et al., 1997; Browne et al., 2000; Fotopoulos and Krystallis, 2002; Holdworth, 2003; Pelsmaker and Janssens, 2007; Shaharudin et al., 2010; Boivin et al., 2011).

It is also important to consider risks associated with the functionality of green products, as consumers feel it is sacrificed to ensure that products are environmentally friendly (Sriram y Forman, 1993; Ottman, 1998; Picket-Baker y Ozaki, 2008).

The physical risks are related with potential harm caused on consumers or others for the use of a particular product. In this case, no risks are expected to be perceived, but motivators, by contrast. For example, in the case of organic food, consumers feel they are better for health (Padel and Foster, 2005).

To purchase these products, consumers have, very often, to make an extra effort to change habits and routines and these temporal risks can also affect your purchase (Agyeman and Kollmuss, 2002; Fotopoulos and Krystallis, 2002; Biel and Dahlstrand, 2005; De Pelsmacker et al., 2005; Young et al., 2010).

Psychosocial perceived risks are also relevant (Boivin et al., 2011). These are related to the perception that making a bad choice might have a negative impact on the consumer's ego and others' opinions. Social pressure induces pro-environmental attitudes (Allcot, 2009; Ayres et al., 2009).

In the present study, the perceived risks are analyzed taking into account the global risks perception. This perception includes financial, functional, physical, temporal and psychosocial risks.

Green consumption is also related to consumer's value orientations (collectivist or individualistic). Yamaguchi (1994) defines the collectivist person as someone

predisposed to give priority to collective over the private interest and the individualists' behavior is often guided by the self-interest (Triandis, 1995).

The objectives of this research are:

- To understand the relationship between environmental attitudes and green purchase behaviour;

- To understand more deeply the role of global risks perception as a mediator of the relationship between environmental attitudes and green purchase behaviour;

- To identify the weight of each risk in the global risk perception, whether barriers or facilitators;

- To examine the role that cultural values (collectivism/individualism) have on the relationship between attitudes and green purchase behaviour;

- To compare the results with previous studies in order to produce new academic insights;

- To present a model that enables marketers to better understand the green consumer and develop strategies for these segments.

Based on literature review, the following hypotheses were assessed:

H1. There is a positive relation between Environmental Attitudes and Green Purchase Behaviour.

H2. Global Perceived Risks perception mediates the effect of environmental attitudes toward Green Purchase Behaviour.

H3. The effect of Environmental Attitudes on Green Purchase Behaviour will be stronger with higher degrees of Collectivism (vs. Individualism).

## Methodology:

Data for this study was collected online from sample of 635 respondents from Spain and Portugal using a structured questionnaire. The questionnaire contained questions to measure consumers' environmental attitudes, purchase behaviour, risks perception towards green products frequently bought in supermarkets (such as food, personal

care and home cleaning) and cultural values (collectivism/individualism). Through SPSS 20.0 and AMOS 18.0, descriptive statistics, factor analysis and structural equation modelling were assessed to analyze the findings of this study.

## Results and Conclusions:

The study results have shown that environmental concern attitudes have a positive relation with green purchase behaviour and that global risks perception mediates partially this relation. Financial perceived risks and convenience perceived risks have a positive relation with global risks perception, which means that are perceived as risks. On the other hand, physical/performance perceived risks and psychosocial perceived risks have a negative relation with global risks perception, which means that are not perceived as risks, but as motivators. At the end, individualism/collectivism as a moderator of the relation between environmental concern attitudes and green purchase behaviour was rejected, proving that such relation does not exist in the context of this study.

The proposed framework provides relevant insights for academia to better understand the relation between environmental attitudes and green purchase behaviour by exploring the global risks perception as a mediator. For marketers the outcomes help to establish proper communication strategies and tactics to enhance the value proposition of green products.

This research was conducted by generating a non-random, heterogeneous sample and hence the results may not be generalized beyond the sample frame. For future research, green consumers can be divided into different groups, and future studies can segment them accordingly to further investigate their perceived risks regarding green products.

## Keywords:

Environmental attitudes, green consumption, green marketing, perceived risks, cultural values.

# RESUMEN

## Título:

Consumo Verde: Estudio de la relación entre las actitudes medioambientales y el comportamiento de compra. El papel de los riesgos percibidos y de los valores culturales.

## Introdución:

El crecimiento demográfico, la explotación de los recursos naturales, el cambio climático y otros factores están poniendo al mundo en una trayectoria de desarrollo que no es sostenible (KPMG, 2012).

La conciencia ambiental de los consumidores se ha intensificado en gran medida en las últimas décadas (Kalafatis et al., 1999).

En consecuencia, los consumidores estan más preocupados con el medio ambiente y progresivamente han ido cambiando sus hábitos diarios y patrones de compra (Krause, 1993).

Las organizaciones, tratando de mantener su competitividad, empiezan a incorporar estas nuevas preocupaciones en sus procesos, como la adopción de políticas de “gestión verde”, donde se inlcuyen las estrategias de “marketing verde” (Straughan y Roberts, 1999; Chen y Chai, 2010; Rivera-Camino, 2007).

El proceso de toma de decisiones se vuelve cada vez más complejo cuando los consumidores se comprometen con un estilo de vida más verde (Young et al., 2010).

Las decisiones de compra diarias se convierten en soluciones de compromiso entre cuestiones conflictivas y terminan con frecuencia en la llamada "disonancia entre actitud y conducta" lo que significa que los consumidores, a pesar de estar concienciados sobre el medio ambiente, son reticientes a traducirlo en sus compras (Kalafatis et al., 1999; Barr et al., 2003; Gardyn, 2003; Hughner et al., 2007; Moisander, 2007; Kilbourne y Pickett, 2008; Young et al., 2010).

Esta incongruencia se ha convirtido en un obstáculo para los profesionales de marketing (Wong et al., 1996; Crane, 2000; Mintel, 2006; Pickett-Baker y Ozaki, 2008; Albayrak et al., 2011).

Los estudios científicos existentes sobre el comportamiento del "consumidor verde" y "marketing verde" indican que el fenómeno aún no ha sido aclarado suficientemente (Ottman y Reilly, 1998; Ottman et al., 2006; Lee, 2008).

## Objetivos:

La presente investigación tiene como objetivo estudiar la relación entre las actitudes y el comportamiento de compra pro-ambiental, teniendo en cuenta el papel de los riesgos percibidos y de los valores culturales.

El precio más elevado de los productos verdes, debido a la falta de economías de escala, es un importante inhibidor del consumo verde (Schlossberg, 1992; Sriram y Forman, 1993; Ottman, 1994; Mainieri et al., 1997; Browne et al., 2000; Fotopoulos y Krystallis, 2002; Holdworth, 2003; Pelsmaker y Janssens, 2007; Shaharudin et al., 2010; Boivin et al., 2011).

Es también importante tener en cuenta los riesgos asociados con la funcionalidad de los productos verdes, ya que los consumidores sienten que ésta es sacrificada para garantizar que los productos son amigos del medio ambiente (Sriram y Forman, 1993; Ottman, 1998; Picket-Baker y Ozaki, 2008).

Los riesgos físicos están relacionados con lesionar a los consumidores o a terceros por la utilización de un determinado producto. En este caso se espera que no sean riesgos, sino facilitadores. Por ejemplo, en el caso de los alimentos orgánicos los consumidores sienten que son mejores para su salud (Padel y Foster, 2005).

Para comprar estos productos, los consumidores tienen, muchas veces, que hacer un esfuerzo extra cambiando sus hábitos y rutinas y estos riesgos temporales también podran afectar a su compra (Agyeman y Kollmuss, 2002; Fotopoulos y Krystallis, 2002; Biel y Dahlstrand, 2005; De Pelsmacker et al., 2005; Young et al., 2010).

Los riesgos percibidos psicosociales también son relevantes (Boivin et al., 2011). Estos están relacionados con la percepción de que hacer una mala elección podrá tener un impacto negativo en el ego de los consumidores y en las opiniones de otras personas. La presión social induce actitudes pro-ambientales (Allcot, 2009; Ayres et al., 2009).

En el presente estudio, los riesgos percibidos son analizados teniendo en cuenta la percepción global de los riesgos por el consumidor como variable mediadora de la relación entre las actitudes ambientales y la compra. Esta percepción incluye riesgos financieros, funcionales, físicos, temporales y psicosociales.

El consumo verde también está relacionado con las orientaciones de valores de los consumidores (colectivistas o individualistas). Yamaguchi (1994) define a las personas colectivistas como alguien predispuesto a dar prioridad a lo colectivo sobre el interés privado y la conducta individualistas como el comportamiento que se guía por a menudo por el propio interés (Triandis, 1995).

Los objetivos de la presente investigación son:
- Entender major la relación entre las actitudes ambientales y el comportamiento de compra verde;
- Comprender más profundamente el papel que puede tener la percepción global de los riesgos como mediador de la relación entre las actitudes ambientales y el comportamiento de compra verde;
- Identificar el peso de cada uno de los riesgos en la percepción global de riesgos, ya sean barreras o facilitadores;
- Examinar el papel que los valores culturales (colectivismo/individualismo) tienen sobre la relación entre las actitudes y el comportamiento de compra verdes;
- Comparar los resultados con investigaciones académicas previas para producir nuevos conocimientos;
- Presentar un modelo que ayude los profesionales de marketing a comprender mejor el consumidor verde y desarrollar mejores estrategias para estos segmentos;

Baseado en la revisión de la literatura realizada, las hipótesis del presente estudio son:
H1. Existe una relación positiva entre las actitudes ambientales y el comportamiento de compra verde.
H2. La percepción global de los riesgos actúa como mediador en la relación entre las actitudes ambientales y el comportamiento de compra verde.
H3. Hay un efecto moderador del los valores culturales (Colectivismo vs. Individualismo) en la relación entre las actitudes ambientales y el comportamiento de compra verde.

## Metodología:

Los datos para este estudio se recogieron de una muestra de 635 encuestados en España y Portugal utilizando un cuestionario *online* estructurado. El cuestionario contiene preguntas para medir las actitudes ambientales de los consumidores, el comportamiento de compra, el riesgo percibido hacia los productos verdes

frecuentemente comprados en supermercados (como alimentación, cuidado personal y limpieza del hogar) y los valores culturales. A través de los softwares SPSS 20.0 y AMOS 18.0, se realizó la estadística descriptiva, análisis factorial exploratorio y confirmatorio (con modelos de equaciones estruturales) para analizar los resultados de este estudio.

## Resultados y Conclusiones:

Los resultados del estudio han demostrado que las actitudes ambientales tienen una relación positiva sobre el comportamiento de compra verde y que la percepción global de riesgos actua como mediador parcial en esta relación. Los riesgos percibidos financieros y los riesgos temporales tienen una relación positiva con la percepción global de los riesgos, lo que significa que son percibidos como riesgos. Por otro lado, los riesgos físicos/rendimiento y los riesgos psicosociales tienen una relación negativa con la percepción global de riesgos, lo que significa que no son percibidos como riesgos, sino como factores de motivación. Al final, el individualismo / colectivismo como moderador de la relación entre las actitudes ambientales y el comportamiento de compra verde ha sido rechazado, lo que demuestra que tal relación no existe en este contexto.

El modelo propuesto proporciona conocimientos relevantes para el mundo académico permitiendo entender mejor la relación entre las actitudes ambientales y el comportamiento de compra verde. Para los profesionales de marketing los resultados ayudan a establecer las estrategias y tácticas de comunicación adecuados para convertir los riesgos en oportunidades de mejora y potenciar la propuesta de valor de los productos verdes.

Esta investigación se llevó a cabo mediante la generación de una muestra heterogénea no aleatoria y por lo tanto los resultados no pueden generalizarse.

Para futuras investigaciones, el modelo se podría aplicar a diferentes segmentos de consumidores verdes y en otras categorías de productos.

## Palavras Clave:

Actitudes medioambientales, consumo verde, marketing verde, riesgos percibidos, valores culturales.

# 1|INTRODUCTION

*"Economic growth and environmental protection are not at odds. They're opposite sides of the same coin if you're looking at longer-term prosperity" - Henry Paulson*

Businesses today are being developed on an interconnected and globalized world. Consumer demands and government policies are changing and a new set of challenges are emerging. Since the last 30 years there is a public recognition that the way business are done have serious impacts on the world around us. A study called *Expect the Unexpected* conducted by *KPMG* (2012) shows that population growth, natural resources exploitation, climate change and other factors are putting the world on a development trajectory that is not sustainable.

Environmental awareness was greatly intensified around 1970. Then, the movement "slowed down" as a result of several legislative initiatives that aimed to correct specific problems such as the emission of toxic gases in the atmosphere. The topic was put again in evidence on the 80s due to the existence of environmental disasters (Titterington et al., 1996).

Some authors consider the 90s as "the decade of the environment" or "the Earth decade" in a way that more and more environmental concerns became relevant in this period (Prothero, 1996; Menon et al., 1999). This fact resulted in a considerable increase in the environmental awareness by consumers (Kalafatis et al., 1999). McIntosh (1991) has listed some key factors that enabled this phenomenon, namely the increased media coverage, the generalized intensification of the environmental problems, the existence of influential groups that started to organize related activities such as NGOs, the strong impact on the public opinion after some major environmental disasters and also the existence of local and foreign legislation. Consequently, consumers became more environmentally concerned and progressively have been changing their daily habits and purchasing patterns (Krause, 1993).

From the entrance on the new millennium on, environmental concern has entered in a "third phase" with stricter governmental regulations and incentives. For instance, Rio +20 in June 2012 focused on the "green economy" and resource consumption, innovation and behavioural change were themes discussed.

Currently, besides environmental issues there is a broader challenge of having also a commitment that includes economic and social goals (Čiegis et al. 2009). This scenario is motivating companies and organizations to involve in transformation processes with the aim of minimizing the negative impacts of their activities.

Within this context, new business philosophies emerged empowering organizations to take in consideration sustainability issues that become to be seen as an innovative and differentiation factor that led to competitive advantages (Fraj-Andrés et al., 2009).

Therefore, organizations, seeking to remain competitive, begin to incorporate these new concerns on their processes, adopting green management policies, where green marketing strategies are included (Straughan and Roberts, 1999; Chen and Chai, 2010; Rivera-Camino, 2007). Recent studies also revealed that green management has a positive impact on financial performance (Molina-Azorín et al., 2009; Huang and Kung, 2011).

From marketing perspective, the importance of understanding the green consumer behaviour in order to develop better segmentation and targeting strategies was put in evidence (D'Souza et al., 2006). Green consumers are changing in significant ways. The trend is that consumers, although with some reluctances, are moving to greener products. The *Mintel* organization reported results from a study indicating that the number of consumers who do buy green, has tripled in recent years (Makower, 2009). Further, it found that the number of consumers that never bought green products, has decreased by half. These results show that the widespread of environmental awareness had an important role in purchasing behaviour, with more and more consumers considering the environmental impact of their buying decisions and looking for a greener alternative to their conventional purchasing options.

Although, some other authors claim that despite many consumers state they care about the environment, it does not affect their effective buying behaviour (Kalafatis et al., 1999; Barr et al., 2003; Gardyn, 2003; Hughner et al., 2007; Moisander, 2007; Kilbourne and Picket, 2008; Young et al., 2010).

Research shows that individuals' environmental concern has had an impact on consumer purchase decisions. However, it does not always result in effective purchases. A considerable number of consumers who claim to be environmentally

conscious still do not purchase a green product and the ones who do it, do not purchase it on a regular basis.

*GFK Roper's Green Gauge* about Americans' attitudes towards green shopping reports that only 41% of Americans say that their concern for the environment is “very serious and should be a priority for everyone”. Another 41% said that their concern about the environment is “somewhat serious, but there are other more important issues that we need to address” (Makower, 2009).

Numerous theoretical frameworks have analysed green buying behaviour with different approaches, however no definitive explanation has yet been found.

Indeed, when consumer faces a purchase decision about whether, or not, to buy a product or service there is a potential that the decision might contribute to a more or less green consumption pattern. The decision-making process became increasingly complex when consumers engage with a greener lifestyle (Young et al., 2010). These daily decisions often result in trade-offs between conflicting issues and frequently end in the so-called ‘attitude–behaviour gap’ or ‘values–action’, meaning that consumers, in spite of being environmentally conscious, they are reluctant to translate this into purchases (Kalafatis et al., 1999; Barr et al., 2003; Gardyn, 2003; Hughner et al., 2007; Moisander, 2007; Kilbourne and Picket, 2008; Young et al., 2010).

This incongruence between environmental concern and effective purchasing became an obstacle to green marketers (Wong et al., 1996; Crane, 2000; Mintel, 2006; Pickett-Baker and Ozaki, 2008; Albayrak et al., 2011).

Carrigan and Attalla (2001) claim that consumers tend to purchase green products only when there are no costs involved in terms of higher prices, lower quality and convenience when comparing to traditional purchasing. In this sense, green consumption faces some barriers but there might be some motivators as well. For instance, many consumers are motivated to buy organic food because they believe that it is healthier than processed food (Fotopoulos and Krystallis, 2002), in spite of the higher prices and low availability. In other words, consumers might perceive some risks when facing a green purchase decision and these risks might be perceived as barriers or motivators.

The existing academic studies regarding green consumer behaviour and green marketing enable to state that the phenomenon has not been sufficiently clarified yet (Ottman and Reilly, 1998; Ottman et al., 2006; Lee, 2008).

Although some studies suggest more general models of green purchase behaviour, there are only a few empirical studies that have tested conceptual models incorporating the role of perceived risks on the relation between environmental attitudes and behaviour (green purchase).

The present investigation aims to better explore the relation between environmental attitudes and green purchase behaviour. More specifically, the aim is to better understand green purchase consumption and how the relation between attitudes and behaviour can be strengthened. Thus, the investigation will focus on the role of perceived risks and cultural values (individualism/collectivism) might have to better explain the relation between environmental attitudes and green purchase behaviour.

# 2| RESEARCH PROBLEM DEFINITION

## 2.1| Purpose

Academic scholars and marketers argue for a deeper understanding of the gap between environmental concern attitudes and green purchase behaviour (a-b gap), stating that it plays a vital role for green marketing studies.

The "a-b gap theory" was applied by Barr et al. (2003) to environment. The author found that individuals, in spite of being environmentally concerned and aware of environmental problems, it doesn't really mean that it will be taken into account while purchasing. To support this argument, the authors conducted a study in the UK. In this research the respondents were gathered in four different groups according to their level of pro-environmental behaviour and the attitudes and values each group had were analysed. The authors found out that the "pro-environmental" group in spite of having strong environmental attitudes were undertaking less active green behaviour.

Hughner et al. (2007) also pointed out that consumers, although having favourable attitudes towards organic foods (between 46-67%), only 4-10% actually purchased it. Similar results have been reached by research conducted in the United States of America (USA). The conclusions indicated that further research was necessary to confirm the attitude and behavioural relationship (Kilbourne and Pickett, 2008).

According to Young et al. (2010), the decision making process becomes more complex whenever it comes to the adoption of a greener lifestyle and in spite of around 30% of the consumers state they are environmentally concerned, this doesn't mean effectively purchase behaviour.

The theories in consumer behaviour area state that individuals behave in ways consistent with their attitudes. Nevertheless, research in green consumption faces some paradoxes. In one hand there is a lack of evidences in consumer attitude theory that support a positive relationship between attitude toward the environment and behaviour (Kellgren and Wood, 1986; Straughan and Roberts, 1999; Kim and Choi, 2003; Grunert and Juhl, 1995; Schlegelmilch et al., 1996; Kellgren and Wood, 1986; Kim and

Choi, 2005; Tilikidou, 2007), and in other hand, weak relationships were also proved to exist (Webster, 1975; Hines et al., 1987; Mainieri et al., 1997; Tanner and Kast, 2003; Mintel, 2006).

For instance, a study conducted by Hines et al. (1987) has shown that a lower attitude-behaviour correlation was found when attitude was considered as a general environmental attitude compared to when it was considered as a specific attitude towards environmental behaviour. Additionally, the purchase of green products (to opt for environmental friendly products, to switch products for environmental reasons or purchase products packaged in recyclable or reusable containers) were only significantly related to a specific environmental belief (specific attitude), but not the general environmental concern (Maineiri et al., 1997). Furthermore, *Mintel* report (2006) also substantiated it by stating that despite pro-environmental attitudes, the intention to recycle, concern about car pollution and willingness to pay more for environmentally-friendly products, only a few consumers translated these attitudes into their regular purchases.

The research problem of the present investigation aims to explore the relation between environmental attitudes and pro-environmental behaviour, namely green purchase behaviour. Many authors have tried to understand this relation by analysing the determinants of green buying behaviour or explaining it through psychology by analysing consumer motivation or frameworks regarding attitude. However, existing literature is not conclusive to explain the existing a-b relation towards green consumption. Researchers have attempted to explain this inconsistency between attitude and behaviour by attributing it to a number of factors: low correlations among environmental behaviours, different levels of specificity in the attitude behaviour measures, effects of external variables and lack of measurement reliability and validity (Mainieri et al., 1997). Personal (knowledge, motivation or attitudes) and situational (social norms, other attractive choices or economic constraints) factors might also misperceive the relationship between environmental attitudes and behaviour (Mainieri et al., 1997).

According to Lee (2008), further studies are needed to confirm the relationship between environmental attitude and behaviour and the focus may need to be re-geared to other possible variables that may better explain environmental behaviour.

Following these recommendations, the present study aims to further explore the relation between environmental attitudes and green purchase behaviour by taking into account the role of global perceived risks associated with green products purchase, that includes financial (price), functional (performance), physical (effect on consumer's health), temporal (convenience and availability), psychosocial (effect on the self and acceptance by the society). So far, only a few studies have debated the role that perceived risks might have to explain the a-b gap.

Perceived risks include the subjective evaluations of unfavorable consequences and losses with association to physical, performance, temporal (convenience) financial, psychosological aspects of consuming a product category (Dowling and Staelin, 1994; Jacoby and Kaplan, 1972; Yuksel and Yuksel, 2007).

*Green Gauge* reports that 74% of consumers say greener products are too expensive, 61% say that greener products don't work as well, and 55% believe that products that claim to be "environmentally safe" are not what they claim (Makower, 2009).

There are some evidences that suggest that price is a major inhibitor of green consumption. Due to the lack of scale economies in production, green products are usually more expensive that conventional ones (Schlossberg, 1992; Sriram and Forman, 1993; Ottman, 1994; Mainieri et al., 1997; Browne et al., 2000; Laroche et al., 2001; Fotopoulos and Krystallis, 2002; Holdworth, 2003; Pelsmaker and Janssens, 2007; Shaharudin et al., 2010; Young et al., 2010).

Besides price, performance is also important to consider since consumers are reluctant on buying green products because they feel that performance is sacrificed to guarantee that the products are environmentally compliant (Sriram and Forman, 1993; Ottman, 1998; Picket-Baker and Ozaki, 2008). In other words, consumers frequently doubt whether green attributes are affecting the product main functionality and this can be an obstacle for their effective purchase. One example are the electric vehicles. Although consumers recognize they are less aggressive to the environment, they point out that it sacrifices its main functionality, which is mobility.

Physical risks are related with consumers' injure or others for the use of a certain product. In the case of green products it is expected to be not a perceive risk but a facilitator. For instance and as mentioned previously, in the case of organic food (like biological vegetables) consumers feel that they are better for their health. Padel and

Foster (2005) found that health is an important factor for consumers when buying organics.

The temporal perceived risk (convenience), understood as the effort that consumer has to make to acquire green products, is also part of overall perceived risks. As green products are not mass products and sometimes they are even too niche, sometimes very hard to find at point of sales. In order to purchase them, usually consumer needs to make an extra effort that often implies a change in their habits and routines purchase it and this might also affect their effective green purchase (Agyeman and Kollmuss, 2002; Fotopoulos and Krystallis, 2002; Biel and Dahlstrand, 2005; De Pelsmacker et al., 2005; Young et al., 2010).

Psychosocial perceived risks are also part of global risks perception and include physchological and social risks (Boivin et al., 2011). Psychological perceived risks are somehow related to what an extent consumer perceive as risky to make a bad choice that might have a negative impact on consumer's ego. It is expected that this can be also a facilitator and not a barrier, since green products have a positive connotation and consumers who buy this products tend to be more altruist (Roberts, 1996; Straughan and Roberts, 1999; Akehurst et al., 2012). Social perceived risks relates to how the purchase decision will affect the opinions other people hold regarding the consumer. Some studies reveal that social pressure induced pro-environmental attitudes (Allcot, 2009; Ayres et al., 2009).

In the present study, and since perceived risks are not isolated from a situational context of a particular purchase, they are assessed as an overall perception (global risks perception) that consumers face in terms of the magnitude of consequences and the probabilities that these consequences may occur when they buy green products.

Besides perceived risks, green consumption is also related with consumers' value orientations. According to Stern et al. (1993) and Schwartz (1992; 1994), value orientations are believed to guide individual's concerns for the environment and consequently affect their ecologically conscious behaviour. Therefore, it is also relevant to explore the role that cultural values, namely individualist and collectivist orientation, might have on environmental concern attitudes and green purchase behaviour. The individualist/collectivist orientations are related with the relationships that individuals have in each culture and "the degrees to which people in a country prefer to act as individuals rather than members of groups" (Hofstede, 1994).

Yamaguchi (1994) defined a collectivist person as someone with predisposition to give priority to the collective self over the private self, especially when the two come into conflict. Individualists, in contrast, have flexible ties to social groups, and their behaviour is often guided by self-interest (Triandis, 1995). This means when group and an individualistic person's goals are in conflict, personal goals often have primacy.

In this sense, it is expected for collectivist people the relation between environmental attitudes and green purchase behaviour will be stronger when compared to individualists.

To sum up, the present investigation aims to answer to the following research questions:

1) What is and how strong is the relation between environmental attitudes and green purchase behaviour?
2) What is the role of perceived risks to explain environmental concern attitudes and green purchase behaviour? What is the weight that each perceived risks has on global risks perception?
3) Do cultural values (individualism/collectivism) act like a moderator towards the relation between environmental concern attitudes and green purchase behaviour?

The research problem of the present thesis is to better understand the relation between environmental concern attitudes and green purchase behaviour. In order to explore it, the relation that global perceived risks (financial, functional, physical, temporal, and psychosocial) might have with environmental concern attitudes and green purchase behaviour will be ascertained. Furthermore, the role of cultural values (individualism/collectivism) is also taken into consideration.

The objectives of the present investigation are:

- To understand the relation between environmental concern attitudes and green purchase behaviour;
- To understand more deeply the role that perceived risks (financial, functional, temporal, physical, psychological and social) might have as a mediator regarding green consumption
- To identify the weight that each perceive risks has regarding global risk perception, whether barriers or facilitators.

- To examine the role that cultural values, namely collectivism/individualism might have on environmentally attitudes and green purchase behaviour relation;
- To compare the investigation findings with previous academic researches and to produce new insights by taking a network the above interlinked topics;
- To introduce a theoretical framework that could support organizations to better understand the green consumer behaviour;
- To present a model that help green marketers to better understand how green consumer thinks and acts and enable them to target and develop better market strategies for these segments;

The originality of this investigation is to explore and to better understand why consumers often “talk the talk” but “don’t walk the walk” regarding green purchases by examining the risks that consumers might perceive regarding green products and also the effect that cultural values (individualism/collectivism) might have, integrating and consolidating the conclusions on the research done so far.

## 2.2| Academic Relevance

There has been somehow a trend to incorporate environmental concerns when planning marketing strategies. Three decades ago, there were concerns about whether the marketing focuses on satisfying the consumer’s needs and satisfaction and put aside the long term of society and the environment. These questions were activated by Kotler and Zaltman (1971) in their concept of social marketing, which appeals for a socially responsible marketing by adding the following concerns in decision-making of marketing: consumer desires, consumer interests, social welfare and business requests.

Despite environmental topics are increasingly in evidence as a consequence of a greater public awareness in part due to the intense media coverage of the phenomenon, on the academy, more specifically in the marketing field, there is still much to explore regarding green consumer behaviour.

On the present literature review, the academic studies done regarding attitudes and behaviour are reviewed. There are few academic researches with focus on the perceived risks and the relation that might exist between environmental concern

attitudes and green purchase behaviour. Therefore, this study aims to contribute to identify the impact that perceived risks and the effect of cultural values (individualism/collectivism) might have on the environmental attitudes and green purchase behaviour and make the comparison and integration with existing results, contributing for advanced knowledge in this area.

## 2.3| Management Relevance

Due to the increase on social and political pressure, many organizations started to develop green marketing strategies, exploring environmental issues as a source of competitive advantage. Nevertheless, the implementation of a green strategy requires a balance between three variables hardly compatible: profits, customer satisfaction and the public interest (environmental in this case). Therefore, the environmental concern evolved to a broader concept: sustainable development.

Face to these trends, and according to Chan (1996), marketers have to be responsible for providing environmentally friendly products, as well as to incorporate the ramifications of their research in developing new products and marketing strategies in accordance.

According to Polonski (1994), market orientation is gaining importance and a green-oriented company is one in which culture is a major priority in creating and maintaining profitable customer superior value considered when other important interests while maintaining the perspective of minimizing the environmental impact of its product offering.

Charter et al. (2002) have indicated that there are distinct segments of greener consumers emerging who are becoming more and more aware about green products and brands. Although this segment, despite increasing in number, remains relatively small.

Although the size of the segment is small, it is a fact that it is increasing more and more. If companies want to maximize profit and look for solutions to the problems of society in the mid and long term, they have to incorporate them on their strategies (D'Souza et al., 2006). As a matter of fact, companies have begun to modify their behaviour in an attempt to integrate environmental attributes into their marketing and

purchasing strategies (McDonald and Oates, 2006). The increased awareness and changing preferences of consumers became to be considered as a competitive advantage and a driving force that calls for a transformation of traditional businesses to become environmental change agents (Olson, 2009).

However, companies are facing a growing challenge: to predict, accurately, the reaction of consumers in relation to green products in order to be able to develop new strategies with a high degree of reliability. As a result, it is crucial to explore how concerned are consumers with environment, especially how they behave towards green products or environmental friendly products, which risks they perceive related to green products, the effect of cultural values (collectivism/individualism) in order to strengthen, as much as possible, the relation between pro-environmental attitudes and behaviour.

## 2.4| Global Structure of the Thesis

This academic research is divided into seven chapters: (1) introduction, (2) problem definition, (3) literature review, (4) conceptual model and hypotheses, (5) methodology, (6) results, analysis and discussion (7) conclusions, limitations and suggestions for future research.

The first part (introduction) aims to contextualize the theme of the thesis and its importance.

The second chapter is the research problem definition, purpose of study and its relevance to academia and business.

The third part comprises the literature review. Firstly the objective is to introduce green marketing concept and its evolution. Then, it goes through the green products emergence scenario. Subsequently, the focus is on the green consumer profile. Further, the literature review concentrates on the a-b relation studies with emphasis on the global risks perception related to green products (that includes price, performance, physical, convenience and phychosocial) and the effect of the cultural values (collectivism/individualism).

As a result from this literature review, the research hypotheses and conceptual model is presented on the chapter four.

The fifth part of the thesis is related with the methodology and the empirical research, and begins by defining the objectives and methodology of empirical research. The objectives, research hypotheses are recalled, population and sample are defined as well as the methods of data collection and information process.

The sixth chapter deals with the results, analysis and discussion, which involves the validation or refutation of the hypotheses under study and the statistical exercises carried out for this purpose.

Finally, the seventh chapter is the presentation of research findings, conclusions and the point out of the limitations found as well as some suggestions for future research.

# 3|LITERATURE REVIEW

The literature review has four sub-chapters and it is illustrated on Figure 1:

1st Sub-chapter: The objective is to review the concepts of green marketing, green product and green consumer, since these concepts and its evolution are fundamental for a better understanding of the research problem scope;

2nd Sub-chapter: It is where attitude-behavioural researches done until present time are going to be presented and discussed.

3rd Sub-chapter: The focus is to present green purchase context that includes an overview about the global risks perception of green products.

4th Sub-chapter: The aim is to contextualize the effect that cultural values, namely collectivist/individualist orientations might have on environmental concern attitudes and green purchase behaviour.


**Figure 1 - Literature Review Structure.**

## 3.1| Main Concepts: Green Marketing, Green Product and Green Consumer

First sub-chapter is where conceptual definitions are presented (see Figure 2). The main concepts – green marketing, green product and green consumer - are going to be reviewed in this chapter since there is an interconnection among them.


**Figure 2 - Literature Review Structure – Main Concepts.**

### 3.1.1| The Evolution of Green Marketing

Although the green marketing concept began to be discussed in the 60s, it was in the late 80s and early 90s that the concept began to be generalized. The American Marketing Association held the first workshop on the topic in 1974. In this workshop, green marketing was defined as "the study of positive and negative aspects of pollution and depletion of energy sources" (Kinnear and Taylor, 1973).

By the 70s some authors published their first articles about the theme (Kassarjain, 1971; Fisk, 1973; Kinnear et al., 1974). According to Kilbourne and Beckmann (1998), in these first definitions, the focus was on environmentally concerned consumer's profile. In turn, van Dam and Apeldoorn (1996) state that by that time, the efforts were to develop a more social marketing approach. These attempts revealed the possibility of providing a more active response to social and environmental problems (Fisk, 1974).

Ottman (1993) believes that the emergence of green marketing is a result of the finding that companies are being evaluated not only based on their product/service performance, but also on their social and environmental responsibility. Green marketing appears to be part of a solution for not only seeking and satisfying consumer needs and desires but also for monitoring them within a context of environmental responsibility.

According to Polonsky (1994), green marketing consists of "all planned activities to generate and facilitate exchanges in order to satisfy human needs and desires with the least impact possible on the environment". This statement adds an important dimension: a more humanistic marketing concept that includes ecological and social aspects based on minimization of environmental damage. Crane (2000) argues for the existence of a relation between morality and green marketing, because the environment implies some ethical questions that marketing has to be aligned with.

According to Peattie (2001b), there is a need to look for green marketing concept in a dynamic way. At the beginning the concept was more focused on an ecological perspective, but as the interaction between the economy and the environment was developed, the concept evolved to sustainable marketing. This evolution is illustrated in Figure 3.


**Figure 3 - Green Marketing Evolution. Source: Peattie (2001b).**

Green marketing, argues Peattie (2001b), can be characterized into three “ages.” The first age was the 70s and the focus was on ecological marketing because the emphasis was on particular environmental problems, such as air pollution, the depletion of oil reserves, and the impact of pesticides on the environment. The second age was the 80s’ it is called by the author as environmental marketing. The main concerns were regarding clean technology, understanding and targeting the “green consumer” and observing socio-environmental performance as a source of competitive advantage. And the current, third age, is sustainable marketing, which focuses on the goal of creating sustainable development and a sustainable economy. Aligned with these principles, Peattie and Charter (2003) defined green marketing as “an holistic management process responsible for identifying, anticipating and satisfying customer needs and society in a profitable and sustainable perspective”.

In this sense and according to these authors, marketers should not only look for internal processes of the production, but also for the impact that production and consumption have in the development of a sustainable society.

Sustainable development is an orientation that aims to “meet the needs of the present without compromising the ability of future generations to meet their own needs” (UNWCED, 1987).

For Bridges and Wilhelm (2008), sustainability movement may be viewed as incorporating together a diverse group of social activist organizations, whose goals, policies, ideologies, and action plans share a common "worldview". This worldview incorporates ecological (environmental), social (equity), and financial (economic) sustainability, which are often referred to as the "three Es" that constitute the "triple bottom line" (Savitz and Weber, 2006). Consistent with the triple bottom line, Peattie (2001b) indicated that sustainable economic development poses major challenges for marketing. The author points out that the aim should not focus only on customers' satisfaction and profits to investors in the current generation, but also to future generations. There is also an equity challenge that includes encouraging a fair distribution across nations of the costs and benefits of economic development. Another challenge is what the author called "needs/wants challenge". The objective is to focus more on goods and services that meet the "basic survival needs" of poor nations instead of the "wants" of wealthy nations.

Thus, since green marketing is considered to be one of the major trends, it is important to understand the implications of the emergence of this concept is having on green consumption behaviour.

As per green marketing evolution, the present study is integrated and aligned on the sustainable marketing phase. As mentioned above, sustainability involves the combination between economic, environmental and social aims. The social part is the latest evolution of sustainable marketing since it comprises the concerns regarding ethics, human rights, social commitments with community and social corporate responsibility (e.g. fair trade products are an example of products that also accomplish social aspects). Since the majority green products available in market currently focus on environmental claims, the scope of the empirical investigation will focus on green products that highlight environmental features, advantages and benefits.

### 3.1.2| The Emergence of Green Products

The term "green product" and the promise of "environmentally friendly" tend to generalize. Churchill and Peter (2000) state that organizations need to develop new products if they want to survive. Due to the intense competition, the companies that do not innovate lose market for innovative organizations. Although, there is a lack of agreement about what is a green product.

According to Ottman (1995), defining a green product is not an easy task because there are still no proven methods that can effectively measure the environmental impact of one product over another. According to Ottman (1993), “green products are the ones that cause less environmental impact than its alternative”. That is, a green product is one in which environmental and social performance is significantly better than the corresponding conventional or competitive offerings. The green products are usually associated with products that don’t harm the environment and human health. They are generally considered more durable, non-toxic, made from recycled materials and with the least packaging possible.

According to the author, a green product should be designed to meet the needs of environmental protection of consumers concerned about this issue, taking into account, however, that this is a secondary need of consumers. That is, consumers buy products to meet the functional needs for which they were created and the features of non-aggression to the environment can act as an “add-on” to the product, exceeding customer expectations.

However, Ottman (1993) argues that there are no totally environmentally compliant products, since the development and production of any product generates waste during its manufacture, distribution, consumption and at the stage where the consumer discards it. Thus, this same author states the dimensions that should be considered for the appropriate process and development of environmentally products are: acquisition and processing of raw materials, production and distribution, product usage and packaging and re-use and discard, as follows:

1) Acquisition and processing of raw materials

- Conservation of natural resources such as water, land and air;
- Protection of natural habitats and endangered species;

- Minimization of waste and pollution, especially the use and release of toxic substances;
- Transportation;
- Use of renewable resources, sustainable use of resources;
- Use of recycled materials.

2) Manufacturing/Production and Distribution:

- Minimal use of materials;
- Use / Release of toxic substances;
- Waste handling;
- Use of water;
- Air, land and water emissions.

3) Product usage and packaging:

- Energy efficiency;
- Conservation of natural resources such as water needed for the use and manufacture of the product;
- Consumer health and environmental safety.

4) Reuse/Discard

- Recyclability and ease of reuse;
- Re-manufacturing and repair;
- Durability;
- Biodegradability;
- Safe when incinerated or placed in landfill.

Ottman (1993) argues that a green product to be declared as such, all these dimensions must be taken into consideration and the failure of any of these dimensions might compromise the promise of the product. McDaniel and Rylander (1993), reinforce this statement by claiming that the products become less harmful to the environment, when all operational areas consider all environmental impact of business activity throughout the life cycle of the product.

Manieri et al. (1997), define green products as products that are benign toward the environment and illustrate it with some examples “household items manufactured with postconsumer plastics or paper, recyclable or reusable packaging, energy-efficient light

bulbs, and detergents containing ingredients that are biodegradable, non-polluting, and free of synthetic dyes or perfumes".

According to Menon and Menon (1997) some green products are an environmentally superior alternative and are financially successful. The companies that manufacture these products are incorporating the environmental attributes of products and not simply put them in retrospect with existing products.

However, a study from *GfK's Green Gauge Raup* (2012) states that about 42% of consumers felt that green products do not work as well as conventional ones. This could have happen at the beginning of the "environmental age". Nowadays, thanks to the advances in science and technology, many green products have greatly improved, with some products being even greater than its non-green competitors.

According to *Eco-Product Directory* (2008), green products address the environmental issues in terms of its characteristics of recyclability, reusability, refillability, long life, degradability or compostability, high quality in terms of its green performance, energy saving, and using recycled materials.

The concept of product life-cycle was explored by Bereketli et al. (2009), as can be depicted on Figure 4.

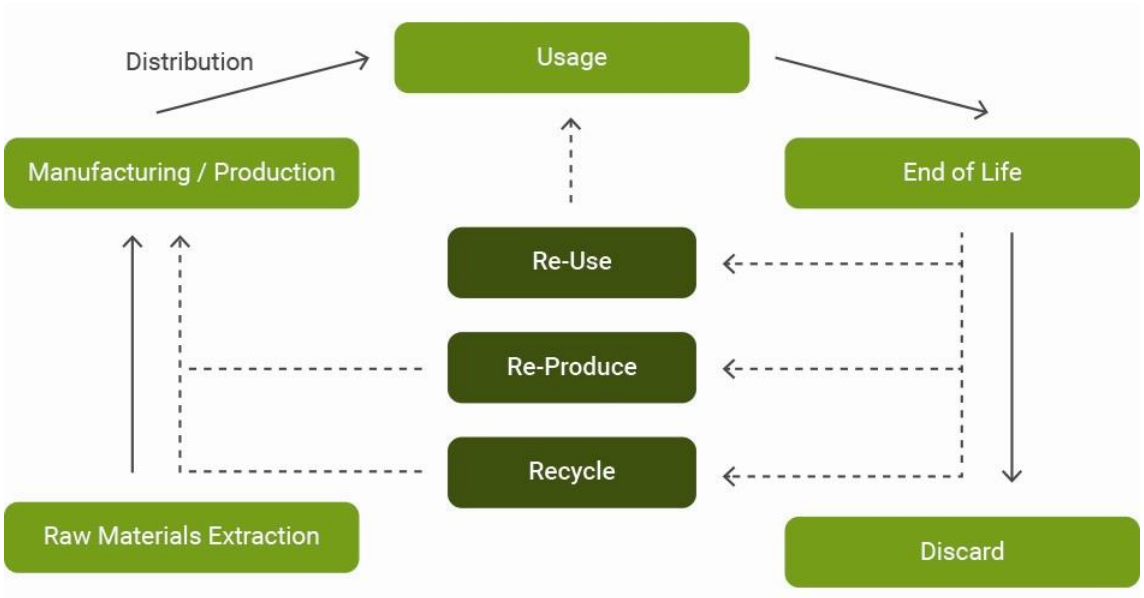


**Figure 4 - Product Life-Cycle. Source: Bereketli et al. (2009)**

Bereketli et al. (2009) refer that to adopt the concept of "green product", it is necessary to act with prudence, to ensure the ability to prove the green claims scientifically, referring to the complete life cycle of the product. These problems are so difficult to solve as there is still great uncertainty about the ecological impact of numerous products and raw materials. As illustrated on Figure 4, the life cycle of a green product distinguishes itself from conventional products mainly because of the attempt to minimize all the impacts along the product life and especially for the focus on the end of life. Basically, in conventional products life cycle there's no concern about what happens after the end of product's life. Regarding green products this phase is anticipated and defined when the product is designed in order to accomplish at least one of the three Rs at the end: re-use, re-produce or recycling.

In an attempt to help consumers to identify correctly the green products available in the market, there were created several eco labels worldwide.

In European Union (EU), since 1992 there is a EU Ecolabel that was implemented through a Regulation of the European Commission. It is voluntary process, which means that producers, importers and retailers can choose to apply for the label for their products. The successful applications are increasing as can be seen on Figure 5.

The EU Ecolabel helps consumers to identify products and services that have a reduced impact on the environment throughout their life cycle, from the extraction of raw material through to production, use and disposal.

Since then, the number of products and services awarded the EU Ecolabel has increased every year, as can be depicted on Figure 5. By the end of 2011, more than 1300 licenses had been awarded. A license gives a company the right to use the EU Ecolabel logo for a specific product group (Figure 6).

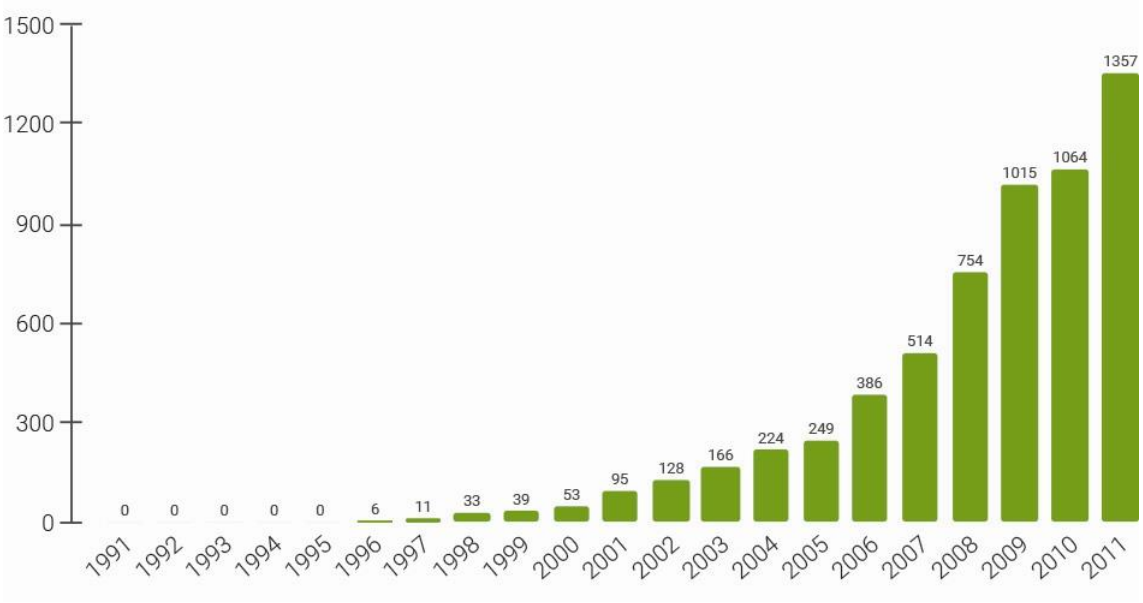


**Figure 5 - Total Number of Licenses issued from 1992 to 2011. Source: *www.ecolabel.eu***

**Figure 6 - EU Ecolabel Logo. Source: *www.ecolabel.eu***

The EU Ecolabel currently covers a huge range of products and services, all non-food and non-medical. Tissue paper and all-purpose cleaners each represent to around 10% of EU Ecolabel products, while indoor paints and varnishes make up nearly 14%. The largest product group is hard floor coverings, which total more than 33% of EU Ecolabel products. There are other categories such as TVs, soaps, and shampoos that are emerging as can be seen on Figure 7.

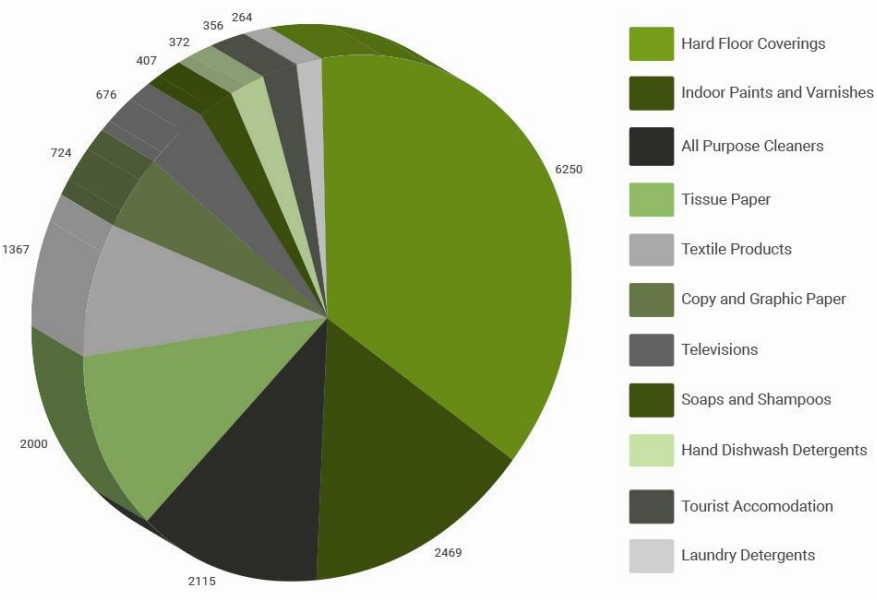


**Figure 7 - Number of EU Ecolabelled Products per Product Group Category (till Jan 2012). Source: www.ecolabel.eu**

As illustrated in Figure 8, the label has been awarded to the largest number of products in Italy, France and the UK. Italy has issued more than 50% of the total number of Ecolabel awards, while France and UK total 22% and 9% respectively. These are followed by the Netherlands and Spain (Catalonia).

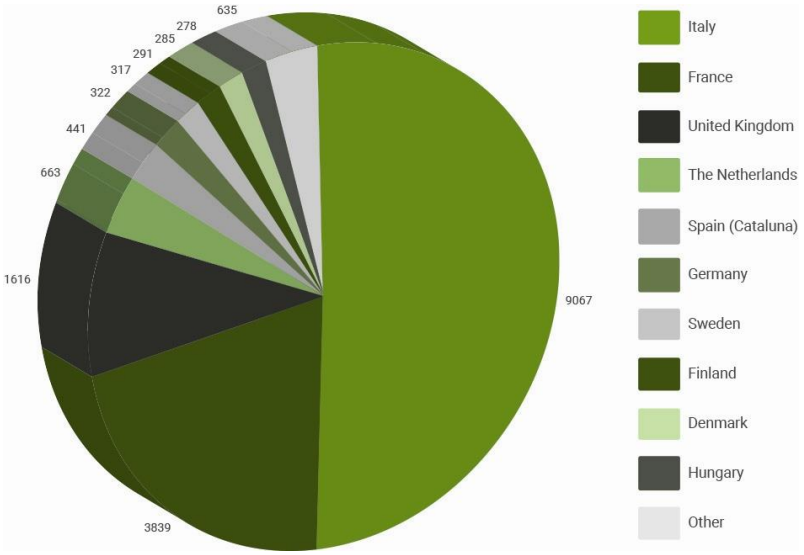


**Figure 8 - Number of EU Ecolabel Licences Issued per Country. Source: www.ecolabel.eu**

A study conducted by Grail Research (2011) called “The Green Revolution Study”, with the aim to understand how the green consumer product market was growing indicated that the key attributes that shape consumers’ perceptions of a green product are centered on natural ingredients, the recyclability of the product or packaging and green certifications, as we can see in Figure 9. Although, the same study also confirmed that consumers are confused about certifications and most do not understand their relevance.

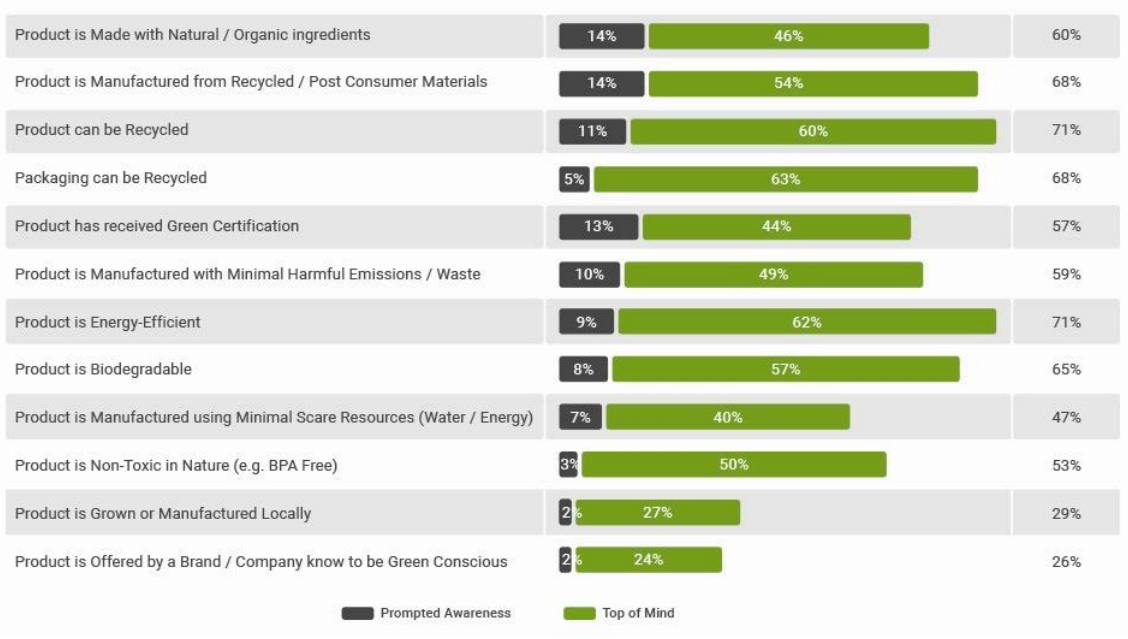


**Figure 9 - Consumer Perception of Green Products Source: The Green Revolution Study, Grail Research (2011).**

In the same study, the potential of growth of the green products per category was also analyzed. The conclusion is that consumers that haven’t switched to green yet are unlikely to change. Green electronics, large appliances and automobiles seem to be the product categories with the highest potential for future growth (see Figure 10).

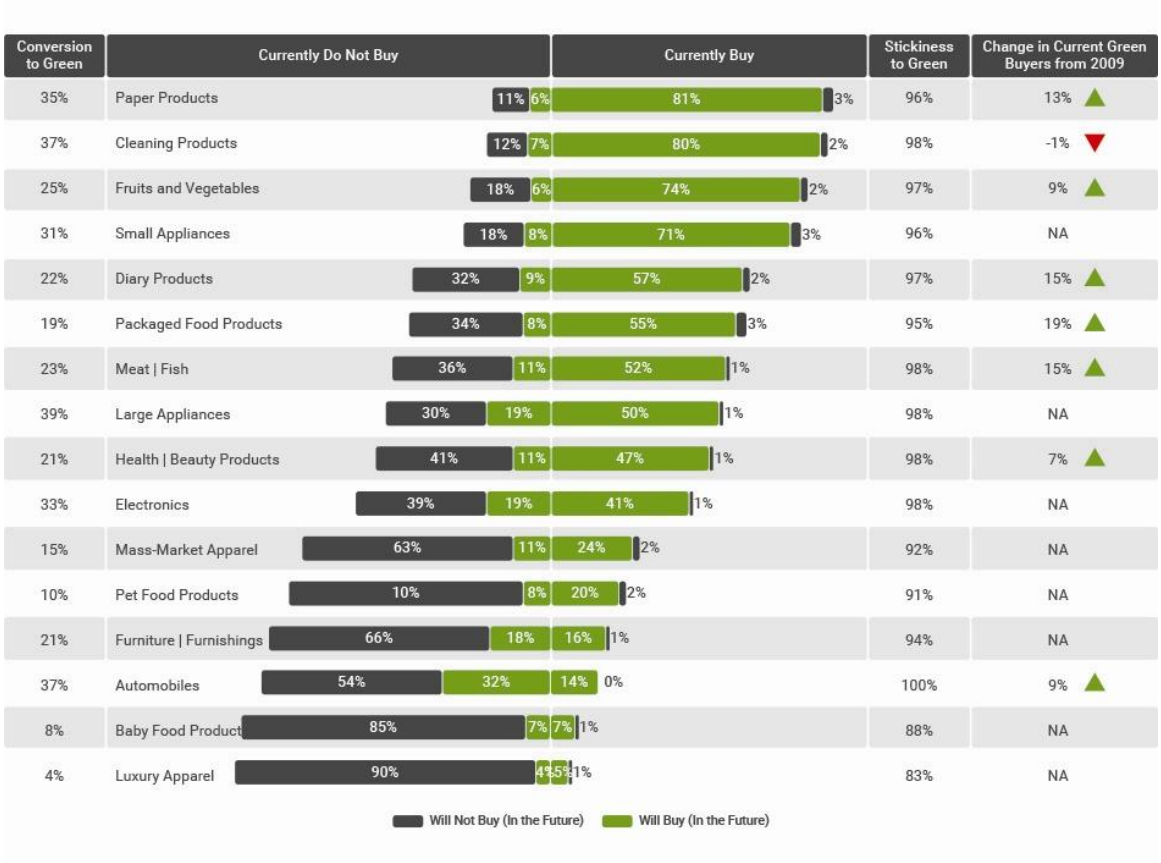


**Figure 10 - Future Potential Purchase of Green Products. Source: The Green Revolution Study, Grail Research (2011).**

Despite the findings seen above that suggest that society is becoming increasingly sympathetic to environmental friendly products, many of these have not reached the expected level of success. This is supported by the findings of two studies in the UK that indicate that although consumer interest in the environment is increasing, the ability to buy environmentally friendly products is not growing (Mintel, 2006). That is, British consumers, although concerned about the environment, are reluctant to change their buying patterns. This is one of the reasons why it is important to understand the relation between environmental attitudes and green purchase behaviour.

### 3.1.3| The Green Consumer

In recent decades, the environment has become more important and consumers began to look for more environmentally friendly alternatives instead of their traditional purchases.

The National Geographic and GlobeScan published the results of the Greendex (2010), a study which evaluates the sustainability of international consumerism. This study, which includes a survey of 17,000 consumers from 17 different countries, reveals that consumers are very concerned about the environment and this has been reflected on their daily consumer preferences.

Ecologically conscious consumers are defined as “individuals who seek to consume only products that cause the leat - or do not exercise any - impact on the environment” (Roberts, 1996). According to Hailes (2007), a “green consumer is the one who associates the act of purchasing or consuming products with the possibility of acting in accordance with environmental preservation”. The green consumer knows that by declining to purchase products that are harmful to the environment, she/he is somehow contributing to environmental preservation. Therefore, according to Hailes (2007), green consumers avoid buying products that they perceive as risky to health, damage the environment during production, use or final disposal, consume much energy, have excessive packaging, and contain ingredients coming from threatened habitats or species.

The existing literature suggests that the previous research regarding the green consumer profile can be viewed from different perspectives. The first group of researchers made an attempt to characterize green consumer profile towards socio-demographic variables such as age, gender, education, income and occupation. For instance, Roberts (1996) has identified a general ecological consumer profile: high income and education as well as a prestigious profession. According to his study, higher education and a higher level of income significantly explain green consumer profile and behaviour.

In turn, the second group of researchers have used psychographic variables instead of socio-demographic ones (Mainieri et al., 1997). These variables include values, interests, attitudes and other characteristics related to personality. Some years later, Barr et al. (2003) also explored these variables. On their research, the authors made an effort to categorize consumers according to their behaviour and attitude towards environment. As a result, four segments were identified: committed environmentalists, mainstream environmentalists, occasional environmentalists, and non-environmentalists. The conclusions showed that a committed environmentalist tends

to be older, from a middle-class group, active within the community and politically involved.

The authors accomplish that although socio-demographic variables are important, the individual values and attitudes also have a key role for distinguishing environmentalists from non-environmentalists. People with environmentally friendly behaviour tend to be more altruist and less hedonistic. The study states that focusing on psychographic factors is more relevant to profile green consumers than socio-demographic variables, and one of the reasons is that as time goes by people change their attitudes according to their lifecycle. As a result, a change in attitudes could, consequently, result in the behavioural change.

#### 3.1.3.1| Socio-demographic Characterization

Socio-demographic characterization was very popular in the 70s and in the 80s, when the first studies that attempt to profile green consumer took place.

Berkowitz and Lutterman (1968) and Anderson and Cunningham (1972), were pioneers in studying the profile of green consumers. Anderson and Cunningham (1972) characterized green consumers as individuals that besides satisfying their personal needs, they are also concerned about the welfare of society and the environment. These authors also state that they belong to a socio-economic class above the average and professional occupations of recognition and status. In a few words, they typified the green consumer as female, 40 years old, with higher education level and socio-economic status above average.

Other researchers have also share similar conclusions highlighting that women tend to be more environmentally conscious than men (Banerjee and McKeage, 1994). In turn, Reizenstein et al. (1974) found that only men were more willing to pay more to control air pollution and Balderjahn (1998) also referred men tend to have a more intense relation between attitudes and use of environmentally conscious products than women.

Despite the wide range of socio-demographic variables used by several authors, the ones that proved to be more significant to profile green consumers are:

- **Age:** The relation between age and other variables was explored by several authors. However, results are contradictory. Some found non-significant relations between age and green behaviour (Kinnear et al., 1974; Straughan and Roberts, 1999; do Paço et al., 2009) while others have found significant and positive relations (Samdahl and Robertson, 1989; Memery et al. 2005; D'Souza et al., 2007);
- **Gender:** This variable was also explored by several authors (Samdahl and Robertson, 1989; Stern et al., 1993; MacDonald and Hara, 1994; Roberts, 1996; Roberts and Bacon, 1997; Straughan and Roberts, 1999). Most part of these researchers argue that women are more likely to act in a more environmentally way than men. However, final results are not conclusive. Empirical studies show that women are more sensitive to environmental issues and perceive them better than men do; and therefore, they more often become green consumers (Ottman and Reilly, 1998; Memery et al., 2005; do Paço et al., 2009). On the other hand, some researches indicate that men possess a deeper environmental knowledge, while women care more about the environmental quality (D'Souza et al., 2006).
- **Income:** According to Awad (2011), income was always perceived to have a positive relation to green consumer behaviour because it is assumed that green products have higher prices than conventional ones. Although, this variable was taken in consideration by several authors, results are not convincing (Kassarjian, 1971; Anderson and Cunningham, 1972; Kinnear et al., 1974; Samdahl and Robertson, 1989; Roberts, 1996; Roberts and Bacon, 1997). Ottman and Reilly (1998) argue that consumers who have higher purchasing power than average are more sensitive to environmental issues in comparison to those who receive average or low income, and this is the reason why green product prices are not a barrier for them. However, general findings are also not conclusive.
- **Education** has a positive relationship with green consumer behaviour in the majority of the performed studies (Aaker and Bagozzi, 1982; Schwartz and Miller, 1991; Roberts, 1996). Consumers with higher literacy level perceived better environmental issues and tend to act in accordance (Ottman and Reilly, 1998; Memery et al., 2005; D'Souza et al., 2006; do Paço et al., 2009). In turn, Samdahl and Robertson (1989) and Straughan and Roberts (1999)

observed that education did not have a positive relation with green consumer behaviour.

As stated previously, socio-demographic variables were commonly utilized in the 80s and 90s mainly due to the fact that green consumers were too niche and variables like higher education or higher income were determinant to profile these consumers. From 90s on, psychographic and behavioural variables started to be considered by researchers.

#### 3.1.3.2| Psychographic Characterization

Despite the identification of the green consumer profile through the social, economic and demographic characteristics, as previously mentioned, several authors argue that psychographic variables provide more relevant insights into green consumer behaviour (Kassarjian, 1971; Anderson and Cunningham, 1972; Banerjee and McKeage, 1994; Chan, 1999; Awad, 2011; Akewurst, 2012). The most prominent psychographic variables taken into consideration by the existing studies are:

- **Altruism:** It is defined as "the concern about the welfare of society and others". It was analyzed by Stern et al. (1993) and by Straughan and Robert (1999). Altruism plays an important role in political activism, but sometimes is not conclusive if there is a direct cost involved. Straughan and Robert's (1999) examined this variable and found a positive correlation with green consumer behaviour. This means that green consumer is likely to be more altruist than conventional consumers and this variable seems to be relevant to explain green consumer behaviour. Altruism is somehow related to other psychographic variable taken into consideration in several studies which is collectivism. In terms of definition, collectivism is similar to altruism but it is understood as a cultural value, as a sense of interdependence of the human being. Several authors argue that collectivistic individuals tend to have more pro-environmental attitudes and behaviours (Chan, 2001; McCarthy and Shrum, 2001; Kim and Choi, 2005; Gupta and Ogden, 2009; Kim, 2011).
- **Environmental concern:** It is commonly defined as the individual's awareness of the environmental problems and their willingness to be part of the problem solution (Chan and Lau, 2000; Dunlap and Jones, 2002).

Several authors correlated this variable with environmental friendly behaviour (Kinnear et al., 1974; Roberts and Bacon, 1997; Straughan and Roberts, 1999). According to Maloney et al. (1975), environmental concern is related to the emotions and knowledge level as well as to a readiness to change behaviour. Bang et al. (2000) and Kim and Choi (2005) argue that the level of consumer's environmental concern is strongly linked to person's willingness to buy green products.

- **Perceived consumer effectiveness (PCE):** It can be considered the most important variable into green consumer profile analysis and it can defined as "the consumer's perception of the extent to which their actions can make a difference in solving environmental problems" (Ellen et al., 1991). In other words, it is the extent to which consumers believe that they, as individuals can make a difference through actions such as purchasing green products, recycling, subscribing to e-invoices, among other, in contributing to environment protection. PCE has been revealed to predict a variety of purchase decisions (Ellen et al., 1991), for example buying biodegradable products (Berger and Corbin, 1992) and sustainable dairy products (Vermeir and Verbeke, 2006). Consumers will act proactively if they perceived their actions are effective for environment preservation (Moisander, 2007). PCE has been included in several studies and it is assumed to be an important predictor of pro-environmental consumer behaviour, outstanding all other socio-demographic and psychographic variables (Kinnear et al., 1974; Balderjahn, 1988; Ellen et al., 1991; Berger and Corbin, 1992; Roberts, 1996; Roberts and Bacon, 1997; Straughan and Roberts, 1999; Joonas, 2008; Gupta and Ogden, 2009; Young et al., 2010; Kim, 2011; Tan, 2011; Albayrak et al., 2011; Akehurst, 2012).

Some of these psychographic variables contribute not only to identify the profile of the green consumer but also to explain green purchase behaviour and will be further analyzed on the subsequent chapters.

#### 3.1.3.3| Green Consumer Segmentation

Green market and by inherence green consumers are subject to segmentation and it is important to identify which similarities and differences between the various types of

green consumers can be used to group consumers in a particular green segment based on their characteristics, buying behaviour, demanding, expectations and marketing mix.

As we have seen previously, in recent decades a number of studies and surveys have been conducted with the aim to increase knowledge about the green consumer. With regard to market segmentation, investigations show that there are many "shades of green".

Several market research consulting groups have developed studies regarding green consumer's segmentation, namely: *Natural Marketing Institute, Mintel, Yankelovich, GfK Roper Consulting e Insight Research Group*. Most part of them classifies green consumers into five segments:

- **True Green Consumers:** These are the consumers that are more active and demonstrate greater commitment to the environment and translate it into their purchases. Generally are environmental leaders and activists. As can be depicted on Table 1, they are named *Lohas (Natural Marketing Institute), Super Greens (Mintel), Greenthusiasts (Yankelovich), True Blue (GfK Roper Consulting)* and *Green Gurus (Insight Research Group)*;
- **Ecollogically Concerned Consumers:** Are those consumers who are willing to pay more for green products, but won't make lifestyle changes (conveninence, effort, time are main obstacles identified). On Table 1, they are classified *as Naturalities (Natural Marketing Institute), True Greens (Mintel), Greenspeaks (Yankelovich), Green Back (GfK Roper Consulting) and Conscientious Citizens (Insight Research Group)*.
- **Moderately Green consumers:** consumers are purchasing only green products if they meet their main needs. They care about environment but would only spend a little more to buy green. On the Table 1, they are named as *Drifters (Natural Marketing Institute), Light Greens (Mintel), GreenSteps (Yankelovich), Sprouts (GfK Roper Consulting) and Guidance Seekers (Insight Research Group)*.
- **Occasional Green Consumers:** They are concerned about the environment but believe that individual behaviour can contribute very little to solve environmental problems. They rarely buy green products based on ecological attributes. On Table 1, they are identified as *Conventionals (Mintel), GreenBits*

*(Yankelovich), Grousers (GfK Roper Consulting)* and *Bystanders(Insight Research Group);*

- **Apathetic consumers:** Those who are not concerned about the environment and do nothing to contribute to a change in consumption patterns. They essentially "don't buy and don't care". On the Table 1 they are named as *Unconcerned (Natural Marketing Institute), Never (Mintel), Greeless (Yankelovich), Apathetics (GfK Roper Consulting)* and *Hype Haters (Insight Research Group).*

**Table 1 - Green Market Segmentation (USA). Source: City Manager Weekly (2008).**

| ***Natural Marketing Institute*** | | ***Mintel*** | | ***Yankelovich*** | | ***GfK Roper Consulting*** | | ***Insigth Research Group*** | |
|---|---|---|---|---|---|---|---|---|---|
| ***2006*** | | ***2006*** | | ***2007*** | | ***2007*** | | ***2007*** | |
| Lohas | 17% | Super Greens | 12% | GreEnthusiasts | 13% | True Blue | 30% | Green Gurus | 17% |
| Naturalities | 21% | True Greens | 68% | GreenSpeaks | 15% | Green Black | 10% | Conscient Citizens | 24% |
| Drifters | 19% | Light Greens | | GreenSteps | 25% | Sprouts | 26% | Guidance Seekers | 24% |
| Convencionals | 20% | | | GreenBits | 19% | Grousers | 15% | Bystanders | 17% |
| Unconcerned | 21% | Never | 20% | GreenLess | 29% | Apathetics | 18% | Hype Haters | 18% |

As indicated on the Table 1, there is a core of consumers who are aware of environmental problems and proactively buy green products in their day-to-day. Depending on the consultant group, the group of green consumers is composed of 10 to 12% of adult consumers. Another group that occasionally buy green products represents 8-24% of all consumers. About 19 to 25% of the consumers are aware of the existence of green products and tried to buy them, however they do not buy often. Moderated green consumers are those who care about the environment to some extent, but not translated into action. They are too busy to buy green products and complain about the cost of products and quality. This group ranges from 14 to 20% of adult consumers who might be persuaded to buy green products based on quality, cost and availability. About 53% to 65% of all consumers have purchased green products at some point.

*GfK Roper Green Gauge*, reported, as showed on the Table 2 that within the scope of a decade truly green consumers grew and apathetic decreased.

**Table 2 - Green Segmentation Evolution (1996-2007). Source: GfK Roper Consulting (2007).**

| | ***1996*** | ***2007*** |
|---|---|---|
| ***True Blue*** | 10% | 30% |
| ***Green Back*** | 5% | 10% |
| ***Sprouts*** | 33% | 26% |
| ***Grousers*** | 15% | 15% |
| ***Apathetics*** | 37% | 18% |

Consumers´ interest in green products and services has been relatively consistent since the late 80s. As we can see on Figure 11, there is a solid commitment of green consumers in the U.S. in recent years. A more detailed analysis on the attitudes and behaviour shows that there is a large group of consumers who think and act green and that will buy green products on a regular basis when the products meet their needs. As can be depicted on Figure 11, compared with 1990, twice as many Americans are sorting their garbage (58% do so on a regular basis), buying products made from or packaged in recycled materials (29%), and cutting down on their automobile usage by public transportation (18%).

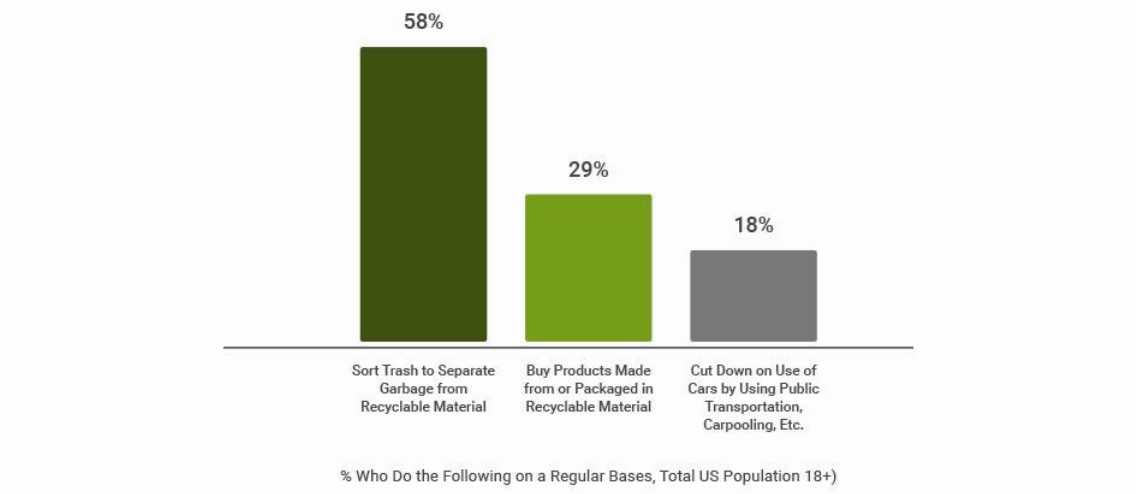


**Figure 11 - Green Behaviour Change (1990-2011). Source: GfK Roper *Green Gauge* (2012)**

In conclusion, green consumers are an increasing segment. Investigations and market surveys indicate that consumers are increasingly expressing concerns about the environment (for example, adopting behaviour such as sort trash for recycling), although there is still some reluctance into translating it into buying behaviours. This trend posits challenges for management and marketing in particular.

## 3.2| The Attitude – Behaviour Relation

The inconclusive results of the researches that were done so far place a challenge for green marketers who struggle to correctly identify the green consumer segment and to explain the determinants of green purchase behaviour.

On this sub-chapter, as it is represented on Figure 12, the literature review focuses on the researches made about the attitude-behaviour relation in a temporal perspective, from the 60s till today.


**Figure 12 - Literature Review – The Attitude-Behaviour Relation.**

### 3.2.1| Attitude, Environmental Attitudes and Pro-Environmental Behaviour

Attitude was firstly conceptualized by Fishbein and Ajzen (1975) as "a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object". It refers to the "psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour" (Eagle and Chaiken, 1993). Conceptually, attitudes can be divided into general and specific attitudes (Sun and Wilson, 2008). A specific attitude is a strong predictor of a single behaviour on a particular attitude object; while a general attitude explains the general tendency to engage in relevant behaviour of a category or attitude object (Azjen and Fishbein, 1975; Hines et al., 1987).

Fishbein and Ajzen's (1975) Theory of Reasoned Action is often used to discuss the attitude-behaviour relationship. It has been applied extensively both in the non-environmental as well as in environmental related studies. According to this theory, attitude and behaviour are correlated in three circumstances. First, the observed behaviour must be relevant to the attitudinal measure in research. Second, the attitude and behaviour examined must be at the comparable or same level of specificity. Third, behavioural intention acts as a mediator between attitude and behaviour. Consequently, Ajzen (1991) extended the Theory of Reasoned action and proposed the Theory of Planned by adding the construct of perceived behavioural control to explain the behavioural intention and actual behaviour. Perceived behavioural control refers to an individual's perceptions of his or her ability to perform a given behaviour. In spite of both theories have been used extensively in environmental behavioural studies (Kalafatis et al., 1999; Soonthonsmai, 2001), Davis et al. (2002) indicated that behavioural intention fail to predict actual recycling behaviour and suggested that the intention-behaviour hypotheses should be abandoned in the future.

In turn, environmental attitude was defined by Schultz et al. (2004) as "the collection of beliefs, affect, and behavioural intentions a person holds regarding environmentally related activities or issues". It refers to the degree that an individual perceives himself or herself to be an integral part of the natural environment (Schultz and Zelezny, 1999). Milfont (2007) defined the environmental attitude as the "psychological tendency that is expressed by evaluating perceptions of or beliefs regarding the natural environment, including factors affecting its quality, with some degree of favour or disfavour". In other words, it refers to the general level of concern that a consumer has towards the well-being and importance of the environment. In this sense, some environmental sociologists have referred to the attitudes towards the natural environment as "environmental concern" (Vining and Ebreo, 1992; Dunlap and Jones, 2002). The terms of environmental attitude and environmental concern have been used to mean the same concept and are overlapped in many studies (Dunlap and Jones, 2002) but also differentiated by many others (Stern and Dietz, 1993; Schultz et al., 2004).

Results of some studies supported the association between environmental attitudes and environmental action (Hines et al., 1987; Lee and Holden, 1999), despite sometimes there was a weak relationship between them. In other hand, other studies failed to support this association (Wiegel, 1985; Gill et al., 1986; Oskamp et al., 1991).

One type of environmental behaviour is “green purchase behaviour” (Chan, 2001; Kim and Choi, 2005; Mostafa, 2007). Green purchase behaviour can be observed in those consumers “who scrutinise labels, who use biodegradable garbage bags and biodegradable soaps and natural detergents, who purchase goods with biodegradable packaging and who refuse to purchase from restaurants where styrofoam packages are used” (Schwartz and Miller, 1991; Minton and Rose, 1997).

To sum up, some theoretical approaches presented above that suggest the attitude-behaviour relation, and for others attitude as a predictor of environmental consumerism is debatable. For a better contextualization, in this sub-chapter, several theories and studies are going to be reviewed on a linear temporal progression basis.

### 3.2.2| The 60s and 70s: The Emergence of A-B Gap and Green Consumption Studies

As mentioned previously, it was in the late 60s and 70s that green marketing started to be discussed and defined as well as the first academic articles about the theme were published. The profile of green consumers also begun to be investigated and as stated on previous chapter the focus was on socio-demographic variables (Berkowitz and Lutterman, 1968; Anderson and Cunningham, 1972; Reizenstein et al., 1974).

In turn, attitude-bahavior studies also emerged in these decades. For instance, Hovland and Rosenberg (1960) suggested that an attitude model consists of three components: cognitive (thoughts or beliefs), affective (positive or negative feelings or emotions), and conative (actions or intentions to act towards the attitude object), as we can see below on Figure 13.


**Figure 13 - Attitude Model. Author: Hovland and Rosenberg (1960).**

Based on this attitude model, Lavidge and Steiner (1961) developed the model of advertising hierarchy of effects, which proposes that consumer goes through a sequential order from initial awareness (cognitive stage), to liking, preference and

conviction (affective stage), and to actual purchase (behavioural stage). As can be depicted on Figure 14, in order to achieve the final stage of purchase decision, the consumer is expected to go through cognitive (awareness and knowledge), affective (liking, preferences), and behavioural actions to purchase a product or a service.


**Figure 14 - Advertising Hierarchy of Effects. Author: Lavidge and Steiner (1961).**

As explained previously, it was on the 70's that Azjein and Fishbein (1975) firstly formulated the Theory of Reasoned Action (that was improved by the authors in 1980), that became the most influential attitude-behaviour model in social psychology and served as model for several researches made on the decades after.

### 3.2.3| The 80s: The Predominance of Rational and Sociological Models

The researches made in the 80s were mainly sociological models with the purpose to explain which variables predict environmental behaviour. The most relevant were the Theory of Reasoned Action improved by Azjen and Fishbein (1980), the Model of Ecological Behaviour (Fietkau and Kessel, 1981) and the Model of Responsible Environmental Behaviour (Hines et al., 1987).

As illustrated on Figure 15, the "theory of reasoned action" (Ajzen and Fishbein, 1980), argues that "people consider the implications of their actions before they decide to engage or not engage in a given behaviour". Consequently, people form their intentions to perform behaviours which in turn stem from a person's attitude towards the behaviour as well as their perception of others' opinions (social norms). The model firstly assumes that people engage in the process that leads to the formation of attitudes, norms and intentions prior to performing the behaviour. This theory was criticized due to some studies failure to support the link between behavioural intention and behaviour. The inconsistency was attributed to the lack of control over a person's action.

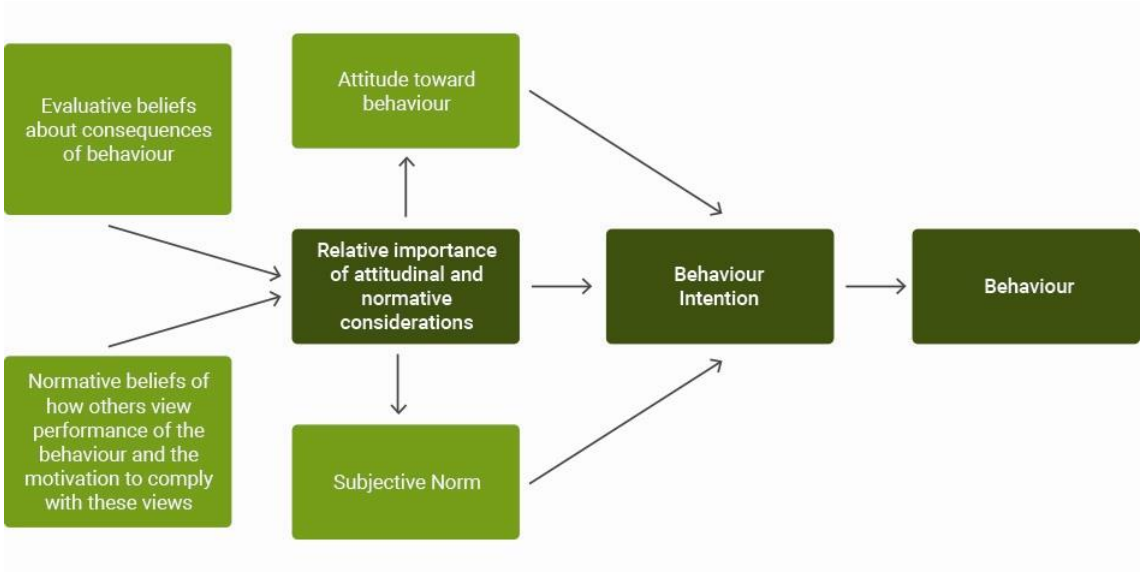


**Figure 15 - Theory of Reasoned Action (Ajzen and Fishbein, 1980). Source: Adapted from Agyeman and Kollmuss (2002).**

In turn, Fietkau and Kessel (1981) proposed a model to explain pro-environmental behaviour based on sociological and psychological factors. The model was entitled Model of Ecological Behaviour and announced five variables that influence either directly or indirectly pro-environmental behaviour, namely: possibilities to act pro-environmentally (external, infrastructural and economic factors that enable or hinder people to act ecologically), incentives for environmental behaviour (internal factors that can reinforce and support ecological behaviour), environmental attitudes and values, perceived consequences of behaviour (individual has to receive a positive reinforcement to continue a certain ecological behaviour) and environmental knowledge. The environmental knowledge has an indirect impact, since it influences directly environmental attitudes and values that, in turn, lead to pro-environmental behaviour (see Figure 16).

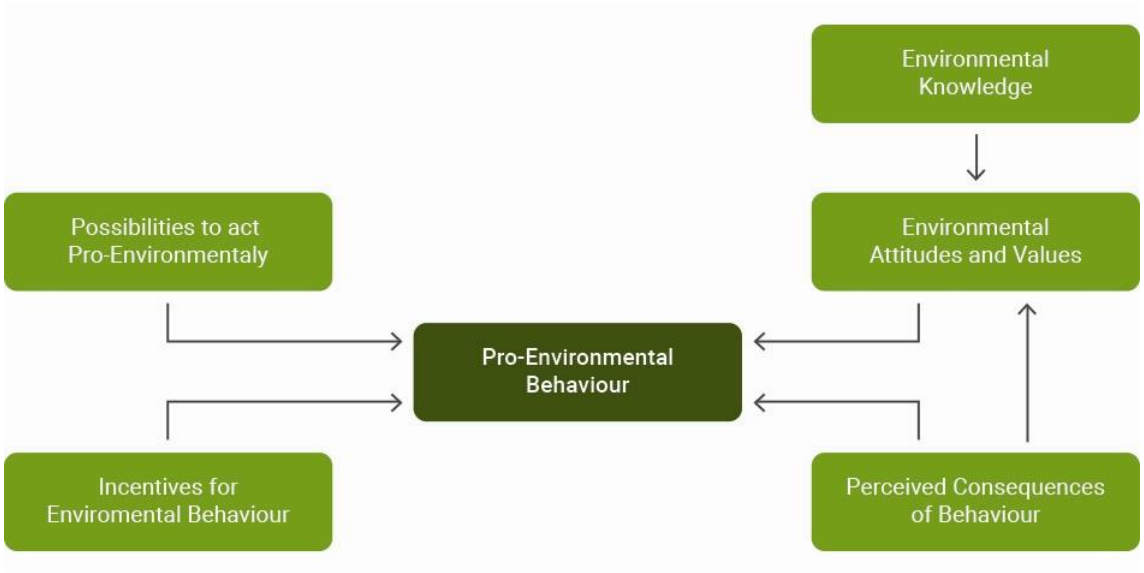


**Figure 16 - Model of Ecological Behaviour (Fietkau and Kessel, 1981). Source: Adapted from Agyeman and Kollmuss (2002).**

Rajecki (1982) states that the divergence between attitude and behaviour can be explained with a better understanding of the following causes:

- Direct experiences (the occurrences that affect directly the person; for example, to have experienced acid rains) have a stronger impact on behaviour than indirect experiences (by contrast, the occurrences that happen with others rather than with the self);
- Temporal effect is also relevant since people change their attitudes over time (for example, people can change their habits and concerns regarding environmental problems over time also taking in consideration age they have);
- Cultural factors, social norms, family habits, traditions are also important to be considered since it might influence people's attitudes.
- Attitude-behaviour measurement bias, since the measured attitudes are much more vague (e.g. Do you care about environment?) than measured actions (e.g. Do you recycle?), and this can lead to incongruences in results.

Weigel (1983) also shares some of these arguments and suggests that attitude-behaviour studies may benefit from the examination of other factors that can influence behaviour, namely personal characteristics (knowledge, motivation, or attitudes) and situational characteristics (social norms, other attractive choices or economic constraints). In some circumstances, any of these factors can influence behaviour

either directly or indirectly (by interaction with other factors). For instance, Hines et al. (1987) found that social norms, economic constraints, and a variety of choices influence pro-environmental actions.

Based on Azjen and Fishbein's Theory of Planned Behaviour, Hines et al. (1987) published their Model of Responsible Environmental Behaviour (represented on Figure 17). They conducted a meta-analysis of 128 pro-environmental behaviour research studies and found the following variables associated with responsible environmental behaviour:

- **Knowledge of the environmental problem:** the individual needs to be aware of the environmental problem and its causes;
- **Knowledge of action strategies:** The person has to know they should to act to help to solve environmental problem;
- **Locus of control:** individual's perception of whether they have the ability to contribute for a positive change through their behaviour.
- **Attitudes:** People with strong pro-environmental attitudes were found to be more likely to engage in pro-environmental behaviour.
- **Verbal commitment:** The communicated willingness to take action also provide some evidences about the person's predisposition to engage in pro-environmental behaviour.
- **Individual sense of responsibility:** The more responsible people are the more likely to engage in environmentally responsible behaviour than others with less sense of responsibility.

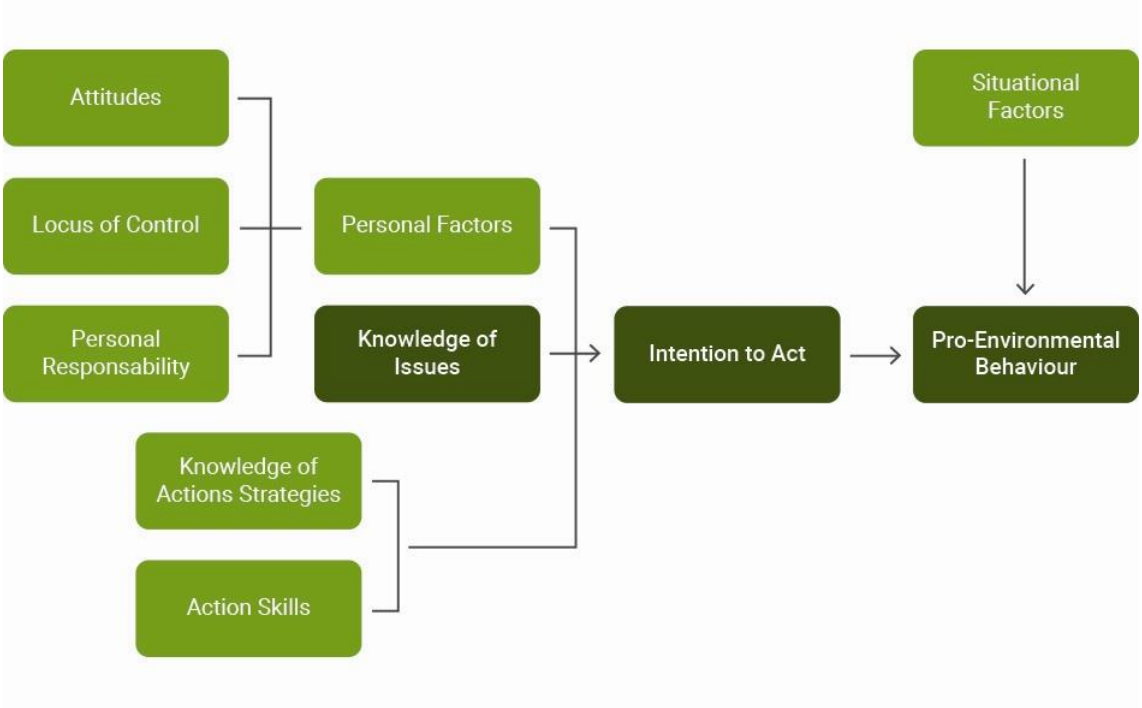


**Figure 17 - Model of Prediction of Environmental Behaviour (Hines et al., 1986). Source: Adapted from Agyeman and Kollmuss (2002)**

The results found stronger correlations between attitudes toward a specific environmental behaviour and the frequency of that behaviour than between general environmental concern and related environmental behaviour. However, the identified factors do not sufficiently explain pro-environmental behaviour. The authors pointed that there seem to be many more factors that influence pro-environmental behaviour like situational factors, economic constraints and social pressures.

### 3.2.4| The 90s: The Decade of Pro-Social, Value-Belief-Norm and Psychological Models

The studies conducted in the 90s started to be focused on rational models such as Ajzen's (1991) Theory of Planned Behaviour and then evolved to pro-social, value-belief-norms and psychological models (Stern et al., 1993; Schwartz et al., 1992-94; Manieri et al., 1997). Great emphasis was driven to psychological variables in an attempt to identify which ones were more relevant to explain green purchase behaviour (Amyx et al., 1994; Schlegelmilch et al., 1996; Roberts, 1996; Straughan and Roberts,

1999). The barriers regarding green consumption started also to be announced in this period (Mainieri et al., 1997; Blake, 1999).

Ajzen (1991) announced his Theory of Planned Behaviour that posits that beliefs, namely environmental beliefs form attitudes towards behaviour, which is then translated into intention of behaviour. Although pro-environmental values do not guarantee pro-environmental behaviour, the author argues that it is likely that pro-environmental values lead to pro-environmental behaviour. The Theory of Planned Behaviour (Ajzen, 1991) extends the Theory of Reasoned action by including a new component, "perceived behavioural control". Generally, behaviours that are perceived to be easier to perform will be completed over difficult behaviours. Perceived behavioural control is also linked to control beliefs which are beliefs about the presence of factors that may hinder or foster behaviour. Therefore, the intention to perform behaviour is enhanced under conditions of favourable attitude towards the behaviour and subjective norm and greater perceived behavioural control. The model also suggests that when individuals are given a sufficient degree of actual control over the behaviour, they will be expected to carry out the behavioural intention (Ajzen, 2002).

Stern et al. (1993) proposed a social psychological model that presumes that environmentally relevant behaviours may derive from three distinct value bases: the welfare of others (altruism); the self (egoism); all living things (biospherism).

This value-based approach for environmentalism has been further facilitated by Schwartz's universal value theory (1992, 1994) which focuses on value priorities at the individual level. Using the conflicts between self-transcendence (socio-altruistic motives that are assumed to be positively related to environmental-friendly attitudes and behaviours) and self-enhancement (egoistic motives that are assumed to be negatively or insignificantly related to them) value domain, researchers have investigated why people engage in pro-environmental actions more or less. Green consumption is related with consumers' value orientations and are believed to guide individual's concerns for the environment and consequently affect their ecologically conscious behaviour (Stern et al., 1993; Schwartz, 1992; 1994).

Regarding the specific green purchases context, environmental knowledge was assumed to play an important role to explain green buying behaviour. Amyx et al. (1994) found that individual who are highly knowledgeable about ecological issues are more willing to pay a premium price for green products. In an effort to explore more

environmental consciousness, Schlegelmilch et al., (1996) presented the three components of environmental consciousness: environmental knowledge, environmental awareness and environmental behaviour and reported that higher environmental consciousness displayed by the consumers indicated a higher frequency of green purchases. On their investigation, the three variables explain more than 20% of the variation on the purchasing measures in green purchase decision in general and the specific purchasing habits of five green product categories. The results indicated the perceived environmental knowledge was related to general green purchase behaviour, and buying recycled paper products.

Manieri et al. (1997) design their study to increase understanding of people's self-reported green buying and other pro-environment behaviours and to determine what beliefs, attitudes, and demographic factors predict these types of ecologically responsible behaviours. On this study, three aspects of environmental consumerism behaviour were measured: factors that influence purchasing, specific environmental purchases, and general environmental buying behaviour. Respondents indicated whether they had ever bought a specific product because they believed it would be better for the environment. The results have shown that consumer beliefs have emerged as a significant predictor not only of all three measures of environmental consumerism analysed but all environmental attitudes as well. Participants with stronger pro-environmental beliefs were more likely to buy products because of their environmental claims, to consider safety to the environment more strongly when making a purchase and to engage in other consumer actions. Other factors, such as demographics, confusion over environmental marketing claims, and participation in other pro-environmental behaviours, did not significantly predict any of these green-buying variables.

Mainieri et al. (1997) also announced several barriers that inhibit green consumption: inadequate availability, labelling, and incorrect marketing practices regarding green products as well as higher prices for some of them.

They also concluded that demographic characteristics that formerly predicted environmental concern are no longer closely associated with it.

In this sense, several authors in the 90s paid attention to the role of psychographic variables versus socio-demographic ones, as we have already seen in previous sub-chapters.

Straughan and Roberts (1999) evaluated ecological conscious consumer behaviour and identified which variables (if socio-demographic or psychographic) better explain green consumer behaviour (see Figure 18).

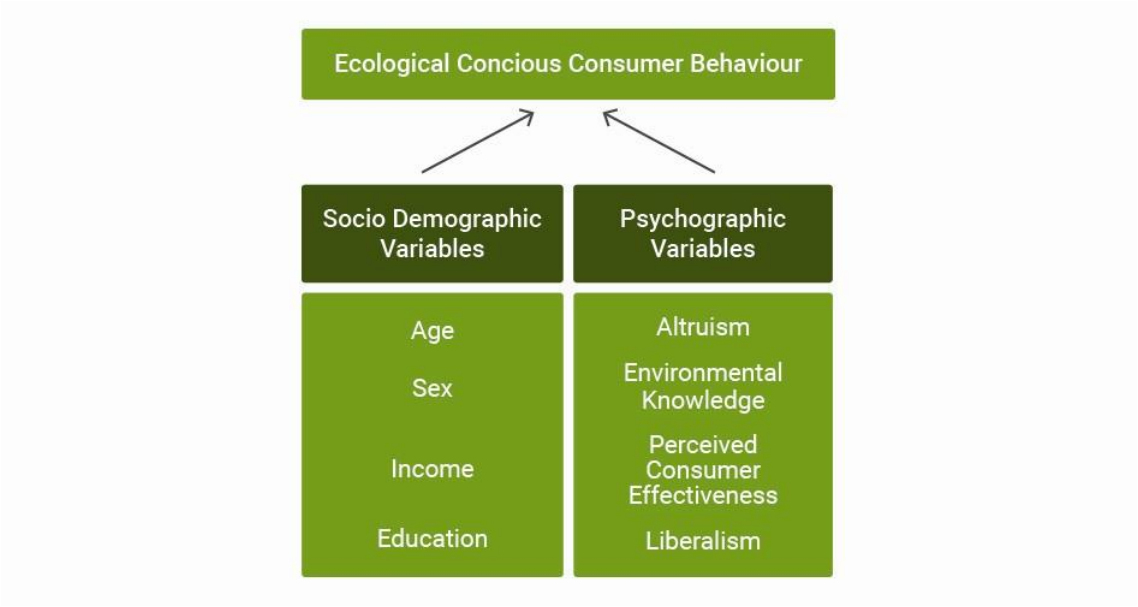


**Figure 18 - Proposed Model to Evaluate Ecological Conscious Consumer Behaviour. Author: Straughan and Roberts, 1999**

The results have shown that psychographic variables were significant to explain ecological conscious consumer behaviour, specially PCE and altruism. PCE, as the perception that the individual has about the impact that their actions might have on environmental preservation, assumed to be the most significant variable to explain ecological behaviour.

This means that despite consumer attitudes toward environmental issues might not be directly translated into pro-environmental behaviour, the effect of environmental attitudes on green behaviour can become greater when consumers believe more strongly that their individual efforts are effective in improving environmental state.

In the same year, Blake (1999) states that most part of pro-environmental behaviour models fail because they don't include individual, social, and institutional limitations and consider that individuals are rational and make systematic use of the information available to them while they are in a decision making process.

As illustrated in Figure 19, Blake (1999) identifies three sets of barriers to environmental action: individuality, responsibility, and practicality.


**Figure 19 - Barriers between Environmental Concern and Action. Source: Blake (1999)**

For individual barriers the author considers the kind of inhibitors that focus on individual and are related with attitude and temperament. Blake (1999) points out that these barriers tend to influence more people that don't have a strong environmental concern. So, in practice factors as laziness or lack of interest might act as individuality barriers to pro-environmental behaviour.

In turn, responsibility related barriers, are based on the psychology concept of "lack of control", which can be translated to the feeling that individuals have that, in spite of their environmental awareness, their behaviour doesn't make a difference to solve the environmental problems. Some examples can be a lack of trust in the institutions that they feel as being suspicious and also a lack of effectiveness feeling.

The practicality associated barriers are defined by the author as "the social and institutional constraints that prevent people from acting pro-environmentally regardless of their attitudes or intentions", for instance lack of time, lack of money, and lack of information.

The author argues that there is an interrelation between all these sets of barriers and might overlap in their sequence.

The existing literature suggests that the barriers inherent to the green attitudinal-behaviour are complex and multiple. Analyzing the role that the barriers have to explain the environmental attitudes and green purchase behaviour is very important for better understanding of green consumer behaviour.

### 3.2.5| The New Millennium: The Momentum of Green Purchase Behaviour Models

In addition to these approaches reviewed previously, from the new millennium on, numerous theoretical frameworks have been developed to explain green purchase behaviour.

As aforementioned, on initial researches the models of pro-environmental behaviour were based on a linear progression of environmental knowledge leading to environmental awareness and concern (environmental attitudes), which in turn was thought to lead to pro-environmental behaviour. However, the research indicated that in most cases, increases in knowledge and awareness did not necessarily lead to pro-environmental behaviour.

In this sense, consumer's values and beliefs gain its momentum and were progressively considered when examining the influences that affect purchasing decisions (Stern, 2000; Chan, 2001; Kim and Choi 2005; Picket-Baker and Ozaki, 2008; Kim, 2011). As per Stern (2000) definition "values are enduring beliefs that a given behaviour is desirable or good and include valuing the environment. Environmental values play a primary role in pro-environmental behaviour: values affect people's beliefs, which then have influences on personal norms that lead to consumer's pro-environmental behaviours". Besides values, external and internal factors that promote pro-environmental behaviour are also presented by Agyeman and Kollmuss (2002) as well as the context of purchase which includes a deeper analysis into the barriers and facilitators of green consumption (Agyeman and Kollmuss 2002; Padel and Foster, 2005; Jonas, 2008; Young et al., 2000; Albayrak et al., 2011). PCE also continues to the in focus as the catalyst of green purchase behaviour. Studies have evolved in an attempt to validate the moderating role of PCE in mediating the relation between environmental attitudes and behaviour (Kim, 2005; Gupta and Ogden, 2009; Young et al., 2010; Kim, 2011; Tan, 2011; Albayrak et al., 2011).

Agyeman and Kollmuss (2002) made an effort to integrate the values but also the external and internal factors that promote pro-environmental behaviour. After a detailed review of the frameworks used in past years, the authors proposed their own model that acts like a macro model, since it integrates several factors to give a broader scenario of the problem. As can be depicted on Figure 20, internal factors as personality traits, value system (among others) as well as external factors as political, social, cultural and economic are considered important to take into consideration while

analysing pro-environmental behaviours. Besides that, several barriers are also announced between the linkages made among the concepts.

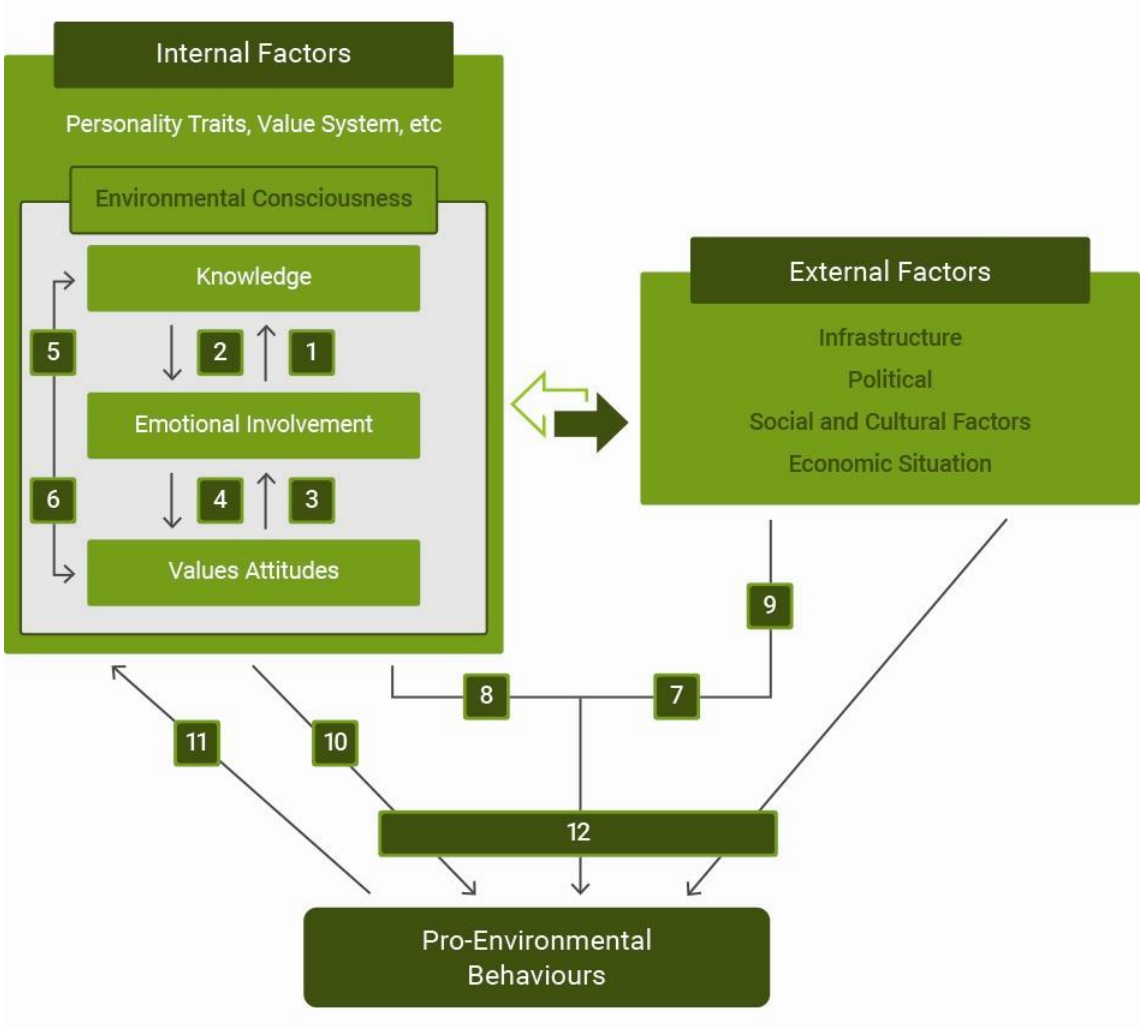


**Figure 20 - Model of Pro-environmental Behaviour. Source: Agyeman and Kollmuss (2002).**

The conceptual relationships between value-attitude-behaviour are put again in evidence with Kim and Choi (2005). The authors examined to the influences of the environmental concern, PCE and collectivism on environmentally sensitive purchase behaviour. Research results are aligned with Chan's (2001) conclusions by indicating

that collectivism had influence on environmentally purchase behaviour, however in Kim and Choi's (2005) study the relation is validated though PCE.

Padel and Foster (2005) also explored the values that underlie consumers purchasing decisions but applied to organic food and also analyse the facilitators and barriers to organics consumption. The results of their study indicated that health is an important factor for consumers when buying organics but not the only reason. Other reasons act as facilitators, namely food as enjoyment, altruistic concerns, concerns for the environment and animal welfare and political motives as support for the local economy and fair trade. The inhibitors that acted like purchase barriers found that price is not an absolute barrier but only one factor in the complex decision-making process that underlies purchasing decisions. Consumers consider price in the context of disposable income, but also "value for money" and need to feel in a position to justify a premium through other gains to be willing to pay a higher price for organic products. In relation to this product category the research indicates that there is a lack of knowledge about certification and labelling and about the guarantee that organic standards really offer to consumers (lack of confidence). The lack of knowledge is derived from the lack of information available about these products. Joonas (2008) conducted a survey among members of environmental organizations in the U.S.A in order to investigate the role of PCE on information search. A significant and positive relationship between PCE and the search for information related to green products was reported, and about 19% of the variation in search for information was explained by PCE, while 6% accounted for by income. As demonstrated previously and supported the past findings, PCE is a better predictor than the demographic variables.

Pickett-Baker and Ozaki (2008) also examined how consumers' values/beliefs and attitudes, as well as their exposure to influences and information, shape their behaviour and perceptions of product performance, with a particular focus on the influential role of marketing and communication. The results of this study confirm the existence of an environmental value-action gap, a gap between consumers' beliefs and behaviours over being green. The research also found that consumers with high pro-environmental values are more likely to believe that green products will perform as expected, whilst among the majority of consumers, a major barrier to the purchasing of green products is concern over product performance. Consumers also indicated that it was sometimes difficult to identify green products. They were not very aware of relevant engaging marketing, which they felt should include information on benefits of and improvements

of the product. The analysis of social factors that explain environmental consumerism was also in focus. Gupta and Ogden (2009) conducted a study with the aim to explain the attitude-behaviour inconsistency in environmental consumerism based on social dilemma theory and reference group theory. The research argues that the attitude-behaviour gap in environmental consumerism exists because it presents a social dilemma to the consumers. For a small subset of consumers who are “true believers” in environmental protection and conservation, the personal importance of the environmental issue ensures unconditional participation. However, most consumers, despite holding a positive attitude toward environmental conservation, make purchase decisions to maximize self-interest because, in their view, the costs of cooperation compensate the uncertain utility obtained from it. The investigation also focuses on reference group theory that suggests that consumer decision to make the trade-off between self and collective group interests may also be dependent on the pressure to comply with the expectations and behaviours of significant reference groups. The proposed model is represented on Figure 21.

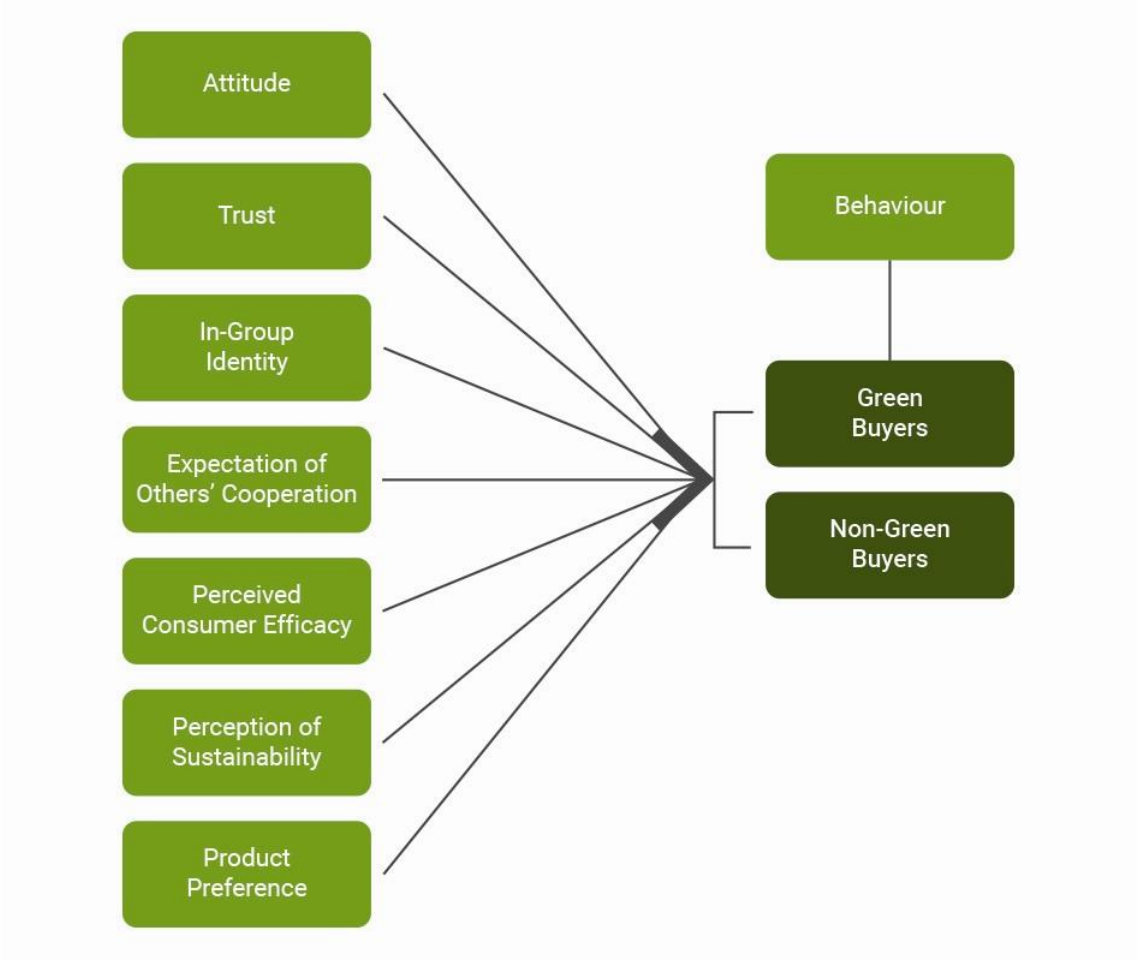


**Figure 21 - Conceptual Model Proposal regarding Social Dilemma Perspective on Green Buying. Author: Gupta and Ogden (2009).**

The results suggest that the decision to purchase green products presents itself as a social dilemma influenced by reference group effects and is driven by the motivation to maximize collective rather than individual gain. Results from the study reveal that several characteristics of the individual – trust, in-group identity, expectation of others' cooperation and PCE– were significant in differentiating between "non-green" and "green" buyers. Findings from the study indicate that green buyers generally are high trusters and expect that others would also engage in green buying behaviour. In-group identity was also significant in discriminating between green and non-green consumers. Expectation of others cooperation was the strongest factor that discriminated between green and non-green buyers. The green buyer made cooperative decision because they expect others to do the same. Results from this study show that when PCE is low the influence of the effect of others cooperation on green purchase behaviour is high. Substitutability was not a significant discriminating factor in the

analysis indicating that both green buyers and non-green buyers did not perceive the green product (CFL light bulbs) and the conventional product (incandescent light bulbs) as substitutable.

Young et al. (2010) conducted a study with the aim of the paper to research the micro-purchase process of green consumers of consumer technology product in the UK. The first element of individual green consumer's purchase processes is the existence of green values, which are influenced by the consumer's knowledge of relevant issues. The second element is choosing the green criteria for that individual purchase. The majority of the interviewees only adopted product environmental performance as a green criterion, reflecting the findings of Wheale and Hinton (2007). Only a very few used sustainability portfolios for their choice of technology-based products. Primary green criteria are usually unmovable during the purchase process but secondary green criteria are discarded if there are strong barriers to green criteria influencing the purchase. Alongside the barriers are factors that facilitate the consumers' green criteria influencing the purchase decision. The key factors that will help green consumers purchase a more sustainable product are: the consumer's green value is strong; the consumer has purchase experience; the consumer has plenty of time for research and decision-making; they possess a good knowledge of the relevant environmental issues; green products are available and the consumer can afford and is prepared for the financial costs. If any of these criteria is a weak or negative influence, then there might have a decrease of the influence of the green criteria on the final purchase. The conceptual model proposed by Young et al. (2010) is illustrated on Figure 22.


**Figure 22 - Green Consumer Purchasing Model. Author: Young et al. (2010).**

Kim (2011) investigated the determinants of green buying behaviour by using a person's value system, as can be observed on Figure 23. Person-level tendencies of collectivism or individualism appear to influence the motivation of consumers to engage in environmentally conscious behaviours. In this study it is postulated that consumer's collectivistic orientations can serve their values, which will importantly influence environmental attitudes, and these attitudes will in turn guide green purchasing behaviour. PCE is considered as moderating variable in an effort to narrow the gap between environmental attitudes and green buying behaviour. Self-enhancement and self-transcendence values tend to exert inverse influences on consumers' environmental attitudes because their opposing motivational goals (promoting the welfare of others and nature vs enhancing selfish interests (Kim et al., 2009).

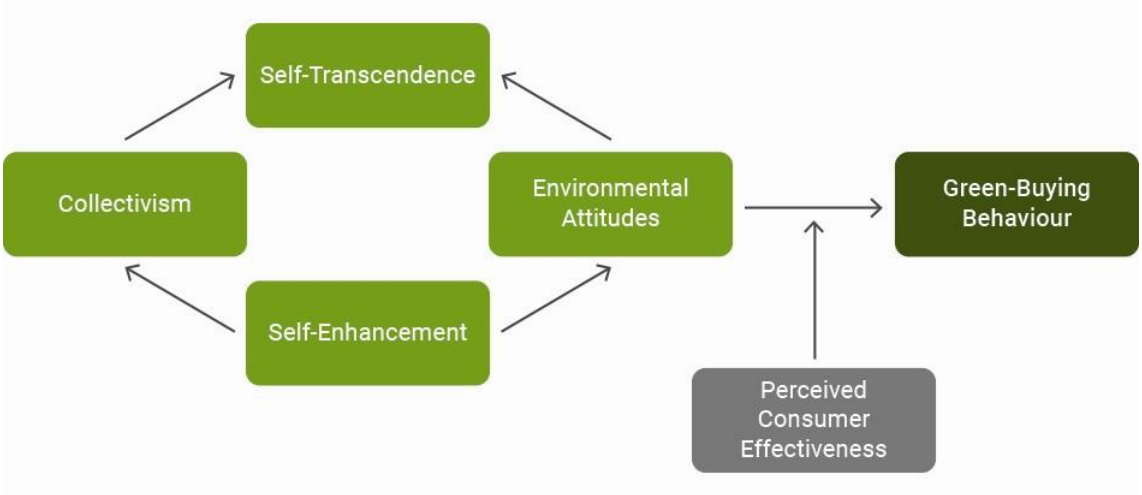


**Figure 23 - Green Buying Behaviour Model Using a Person's Value System. Source: Kim (2011).**

The results have shown that environmental attitudes are an important determinant of green purchase behaviour. Consumers' ecological consumption is importantly determined by their attitudes toward environmental issues. That is, consumers with high environmental attitudes are more willing to buy ecologically considered products. The moderating effect of PCE was not found.

In turn, Tan (2011) developed a conceptual model of green purchase behaviour and examined the integrating effects of environmental knowledge, threat and PCE on attitudes and behaviour. The findings of previous studies revealed that the threat perceived due to environmental problems is a better indicator to explain all the environmental practices compared to the demographic variables. Subsequently, some researchers indicated that the perceived environmental threat is an important determinant of pro-environmental behaviours (Johnson and Scicchitano, 2000). In addition, perceived environmental threat is also reported to have a positive and significant correlation with environmental attitudes (Pahl et al., 2005). Milfont (2007) reported that perceived environmental threat was related to environmental attitude and the impact of threat on environmental behaviour was mediated by environmental attitude. On Figure 24, the conceptual model proposed by Tan (2011) is represented. This model was not verified empirically by the author.

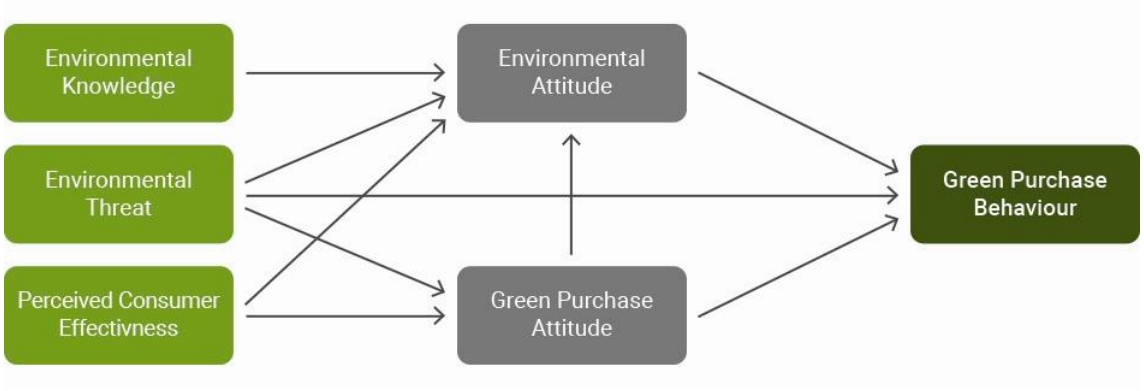


**Figure 24 - A Conceptual Model to Explain Green Purchase Behaviour. Author: Tan (2011).**

Also with the aim to explore green purchase behaviour, Albayrak et al. (2011), besides environmental concern and PCE, also took in consideration the influence of skepticism on green purchase behaviour, as can be observed on Figure 25.

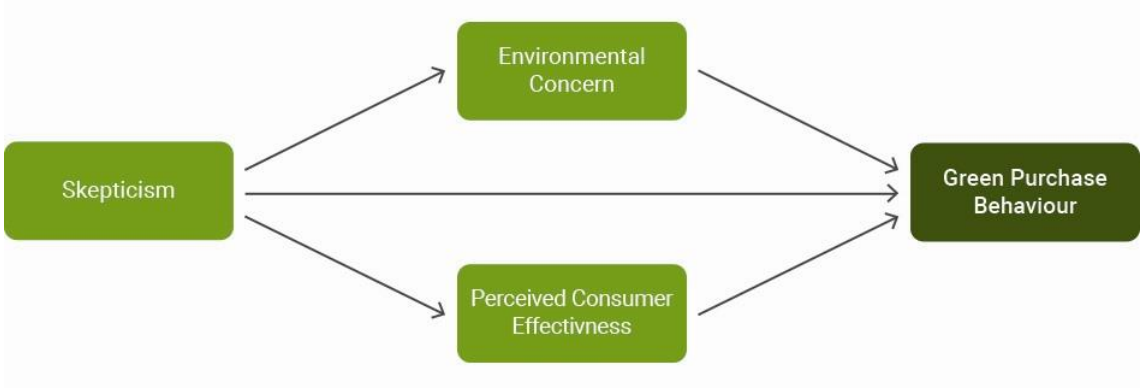


**Figure 25 - Determinants of Green Purchase Behaviour. Author: Albayrak et al. (2011).**

The empirical findings of this study indicated that consumer skepticism on the claims of green products was an important determinant of green purchase behaviour. Besides that, ecological concern and PCE, which are assumed as the other determinants of green purchase behaviour were found to be negatively influenced by consumer skepticism. On the other hand, PCE was the most important determinant which has a positive influence on green purchase behaviour. The influence of the environmental concern was lower if it is compared with PCE. These results indicated that environmental concern has only a few impacts in green purchase behaviour.

To sum up, attitudinal-behavioural researches are nowadays in a more mature phase. Studies in the area emerged in the 60s and 70s. In this period the first attitude-behaviour models were presented, like Hovland and Rosenberg's (1960) attitudinal cognitive-affective-conative model that served as a basis for Lavidge and Steiner's (1961) Advertising Hierarchy of effects. Although, it was on 1975 that Azjen and Fishbein announced their Theory of Reasoned Action that had influenced further studies on subsequent years. These decades were also popular for the raise of green consumer studies, more concretely the ones related with profiling of these new segments with socio-demographic variables. The 80s were known for the predominance of rational and sociological models to explain the relation between attitudes and pro-environmental behaviour. Fietkau and Kessel (1981) introduced the Model of Ecological Behaviour that puts emphasis on the possibilities to act pro-environmentally, incentives, attitudes and values, perceived consequences of behaviour and environmental knowledge. Hines et al. (1987) on their Model of Responsible Environmental Behaviour also highlighted the need to enlarge the scope of analysis by incorporating cultural factors, social norms, economic constraints and the existence of multiple choices. Although it was on the 90s that the value-belief-norms and psychological models gained their momentum. For instance, Mainieri et al. (1997) reinforce the role of pro-environmental beliefs as they found that individuals with stronger pro-environmental beliefs were more likely to buy green products. Also psychographic variables were put in evidence, namely PCE that proved to be the most significant variable to explain ecological conscious behaviour (Straughan and Roberts, 1999). It was also in the late 90s that Blake (1999) argued that individual, social and institutional limitations should be included on the models for more accurate results. From the entrance on the new millennium on, the debate is on integrated approaches to explain green purchase behaviour that benefit from the results of the studies conducted in previous decades. Several studies on the value-attitude-behaviour domain were made (Stern, 2000; Chan, 2001; Kim and Choi, 2005; Picket-Baker and Ozaki, 2008; Kim, 2011). Internal and external factors were also pointed out by Kollmuss and Agyeman (2002), social factors (Gupta and Ogden, 2009) as well as facilitators and barriers to green purchase (Padel and Foster, 2005; Young et al., 2010; Albayrak et al., 2011).

## 3.3| Green Purchase Context

In this sub-chapter green purchase context is analysed with the aim to understand the whole purchasing process, specially the role of perceived risks regarding green products (see Figure 26).


**Figure 26 - Literature Review – Green Purchase Context.**

Green purchase decision process is based on different phases that go from the awareness of necessity by the consumer until the purchase.

Sriram and Forman (1993) argue that although some consumers use hierarchical decision-making methods and simply decline to buy products that are not environmentally friendly, for others there is an evaluation of the product global attributes. The final purchase decision would be a result of a trade-off and environmental attributes are often not taken into consideration when balanced with price or brand awareness.

Peattie (2001) proposed a green purchase perception matrix and implies that "understanding environmental purchasing behaviour is assisted by looking at the extent to which other things are not equal". It means that instead of trying to understand the purchasers, researchers should understand the purchases. He suggested that green purchases for specific product may vary according to the purchaser's degree of compromise involved and degree of confidence generated in the environmental benefits of a particular choice. The compromises include paying the premium price, travelling further to purchase a green product, and accepting a lower level of technical performance in exchange for improved eco-performance. Peattie (2001) revealed that consumers' confidence and compromises are the most important influential factors on their green purchase action.

Barr and Gilg (2006) found from their survey of sustainable household activities in Devon, UK, that green purchase behaviour was the least popular activity alongside activities such as recycling and habitual household activities. Another questionnaire survey in the UK by Wheale and Hinton (2007) suggested that among the population of green consumers there is a hierarchy of importance of ethical drivers in the purchase decision-making process. The environment was rated as the most important ethical driver during purchase decisions, followed by human rights then animal rights / welfare issues.

Hand et al. (2007) claim that the purchasing behaviour is influenced by the context of a particular purchase that can also vary depending on product categories. These factors that contribute to understand this context may include social, economic, political, demographic and psychological factors.

The study conducted by Grail Research (2011) also points out relevant aspects regarding green purchase context. As can be depicted in Figure 27, there are differences between dark green consumers (which are the true green consumers) and the light green (which are the occasional green buyers). When we compare the evolution between 2009 and 2011, the conclusions are that “dark green consumers” are more likely to compare green and conventional products.

Another conclusion is that “light green consumers” are more susceptible to price issues since 29% argue that they only purchase green products if the prices are comparable with those of conventional products. When compared with 2009, “light green consumers” are less likely to deliberately look for green products. Basically, while “dark green” consumers have not significantly changed their in-store buying behaviour, “light green” consumers are less likely to specifically look for green products.

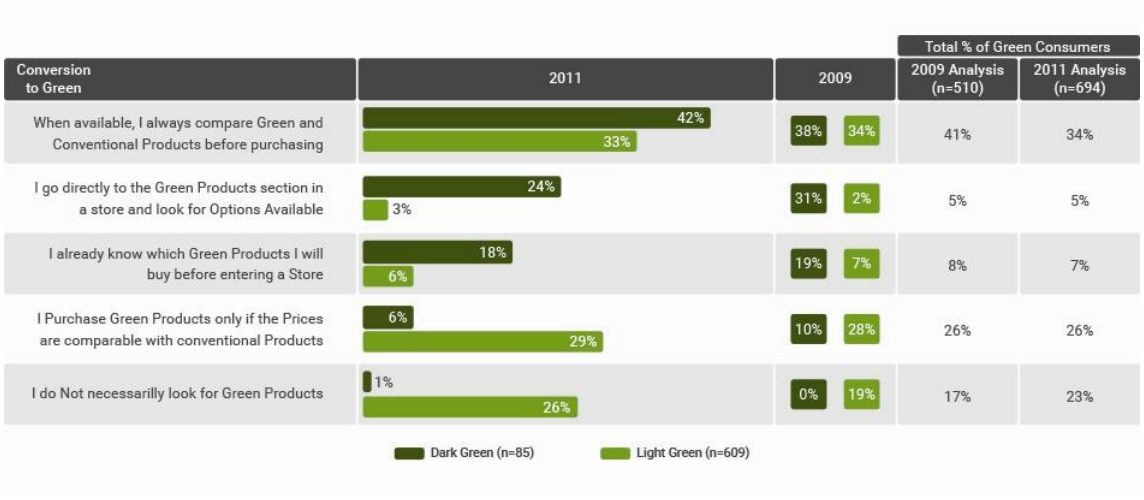


**Figure 27 - In-Store Green Purchasing Behaviour (2009 and 2011 Analysis). Source: The Green Revolution Study, Grail Research (2011).**

### 3.3.1| Green Consumer Classification according to their Needs

Ottman and Reilly (1998) and Wind (2004) argue that as in traditional marketing where the main objective of the strategy is to anticipate and satisfy consumer needs and desires, green marketing also address the same challenge, claiming that when a green consumer buys green products, they are pursuing to satisfy various needs. These needs and purchase strategies can be observed in Figure 28.


**Figure 28 - Green Needs and Purchase Strategies. Source: Ottman and Reilly (1998) and Wind (2004).**

As illustrated on Figure 28, there is a correspondence between needs and strategy that was identified:

- **Need for information:** Getzner and Grabner-Krauter (2004) refer to the need for information as a greater necessity that green consumer has on knowing more, since the information plays a key role in all the green purchase behaviour. It is commonly assumed that the better informed green consumers are, the more motivated they tend to be for buying the product. In this sense, Wind (2004) points out that for green consumers is important to have access to information like how and where to find certain green products as well as available details about the benefits of the product facing conventional ones. D'Souza et al. (2006) also stress the importance that labeling has by identifying green product attributes increasing the awareness of a product;
- **Need for control**: Ottman and Reilly (1998) by need for control mean the necessity that green consumers have to scrutinize deeply the products they buy in order to be certified of all the impact that the product has on its life cycle. This is the reason why the brands, aware about this control need, started to provide to their customers information about how the product is produced, what kind of raw materials and technologies are used for its manufacture, information about the packaging, distribution chain, usage as well as discard, including information about its recyclability.
- **Need to change**: According to Ottman and Reilly (1998), consumers who buy green products besides the functionality need of the product there is also a perspective of contribution to a better world. Basically, the authors argue that when a consumer opts for an environmentally friendly alternative there's an aim to contribute to environmental protection somehow.
- **Need to express lifestyle**: Quality and price are important criteria and have great impact on green consumer's choice. In this sense, green consumers are willing to buy green products that don't compromise their current lifestyle and that don't represent a risk for them in terms of safety (Ottman and Reilly, 1998). Wind (2004) claims that there should be an effort to keep the same or a close price for a green product similar to its conventional alternative.

### 3.3.2| The Role of Perceived Risks

According to Biswas and Biswas (2004), most part of consumption behaviour involves somehow a degree of perceived risk due to the associated uncertainties related with the context of a purchase.

François-Lecompte and Valette-Florence (2006) refer that there are obstacles to green consumption and they pointed out the role of perceived risks to explain the dissimilarity between attitudes and actual purchase behaviour.

The concept of risk is a core concept for a better understanding about how consumers make choices and became relevant for consumer behaviour theory (Bauer 1960, 1967; Cox, 1967a; Hoover et al., 1978; Ingene and Hughes, 1985; Grewal et al., 1994; Mitchell, 1999; Snoj et al., 2004; Mieres et al., 2006; Boivin et al., 2011).

Consumer's behaviour is influenced by the perceived risks associated to the purchase of a product (Pennings et al., 2002). As stated previously, one of the objectives of the present study is to determine the importance that perceived risks might have on the relation between environmental attitudes and green purchase behaviour and then, to explore the weight that each perceived risk has on global risks perception.

#### 3.3.2.1| Perceived Risks Definition

According to the theory of consumers' perceived risk, consumers perceive risk because they face uncertainty and potentially undesirable consequences as a result of purchases (Taylor, 1974; Dowling and Staelin, 1994). Therefore, the more risk they perceive, the less likely they will purchase. Consumers often adopt risk reduction strategies such as information acquisition before they purchase (Roselius, 1971; Taylor, 1974). According to Mitchell (1999), perceived risk is powerful at explaining consumer's behaviour because ''consumers are more often motivated to avoid mistakes than to maximise utility in purchasing''. Consumers also perceive risk because time may be lost or frustration may result where the purchases are unsuccessful (Cox, 1964).

In the consumer behaviour and marketing literature, perceived risk was introduced in the 1960s and has been defined in many ways. Bauer (1960) defines perceived risk as

a two-dimensional concept that involves in one hand uncertainty and in other hand negative consequences.

Kogan and Wallach (1964) also suggested that the concept of risk may have two facets: “a chance aspect where the focus is on probability and a danger aspect where the emphasis is on severity of negative consequences". Cunningham (1967) also conceptualized perceived risk in terms of two similar components, namely: the amount that would be lost if the consequences of an act were not favorable, and the individual’s subjective feeling of certainty that the consequences will be unfavorable.

Stone and Winter (1985) view risk as an expectation of loss. According to the author, risk is defined as “a subjectively-determined expectation of loss” and the greater the probability of this loss, the greater the risk is the perception for an individual.

Consumer behaviour involves always risk because consumer’s action will have consequences which cannot be anticipated with certainty. Sweeney et al. (1999) also reinforce the “loss anticipation” inherent to risk and defined it as “a subjective anticipation of loss of some degree”.

Aqueveque (2006), defined perceived risks as “the subjective anticipation by consumers of conceivable losses when assessing alternative choices”. Perceived risks are also considered as significant upstream precedents impacting ethical consumer behaviour (Tan, 2002, Boivin et al., 2011).

Risk is often viewed as an antecedent of involvement (Choffee and McLeod, 1973) particularly when the price is high and the consumer risks losing money. However, it has also been conceptualised as an intrinsic part of the involvement construct (Laurent and Kapferer, 1985).

Like risk attitudes, involvement has been separated into enduring and situational (Richins et al., 1992). However, distinctions have also been drawn between cognitive and effective involvement (Park and Young, 1986), that act at the product category or brand level.

Risk reduction is also linked to involvement as high involvement with a single brand is commonly known as brand loyalty which has been shown to be a major risk reducer (Roselius, 1971). Moorthy et al. (1997) argue that product class involvement or low

search costs are not sufficient to induce large amounts of search activity and that the existence of relative uncertainty among brands is necessary for search to be useful.

Risk is also related to trust, which has recently been given much attention in the relationship marketing literature (Berry, 1995; Dion et al., 1995; Morgan and Hunt, 1994; Smeltzer, 1997). Ring and Van de Ven (1994) note that two views on trust can be found in the management and sociology literatures. One is a business view based on confidence or risk in the predictability of one's expectations. The other is a view based on confidence in the other's goodwill.

In other words, risk is a subjective estimation by consumers connected with possible consequences of wrong decisions; a possibility that the product will not offer all its expected benefits (Roselius, 1971).

To sum up, risk is conceptualized as a concept based on the probability of realizing losses on a range of dimensions. Moreover, risk perceptions are subjective and contextual in nature.

#### 3.3.2.2| The Relevance of Perceived Risks for Marketing

Since Bauer's (1960) work, several studies in marketing have explored perceived risks for a better understanding of consumer consumption behaviour. The perceived risks have been used to explain and predict traditional and online shopping preferences (Spence et al. 1970; Akaah and Korgaonkar, 1988; Mieres et al., 2006).

In the marketing literature, risk is conceptualized as involving two elements: uncertainty and consequences (Cox, 1967; Cunningham, 1967; Jacoby and Kaplan, 1972; Hansen, 1976; Dowling and Staclin, 1994; Mitchell and Hogg, 1997). The perspective about the consequences has evolved and focused on adverse consequences. As we have seen before, the early studies defined consequences as losses (Cox and Rich, 1964; Stone and Winter, 1987;), but subsequent researchers consider a more integrated conceptualization of risk as the expectation and importance of losses (Peter and Tarpey, 1975; Venkatraman, 1989; Yavas et al., 1993; Sweeney et al., 1999; Aqueveque, 2006).

Later, a consensus was reached among researchers and it was concluded that there are different types of losses: financial, performance, physical, psychological and social. Roselius (1971) considers an additional dimension of time or convenience risk.

According to perceived risks theory consumers make judgments about uncertainties that may pose potential long-term losses. The present study aims to enlighten about how marketers can influence consumer's perception of risks in order to increase their perception of value regarding green products.

Boris et al. (2004) developed a model to explain the relation between perceived value, perceived quality and perceived risks.

The authors studied the relation between two of the concepts of perceived value: perceived quality and perceived risk. According to various authors perceived quality is one of the main concepts of benefits (Klaus, 1985) and perceived risk is the least studied concept of sacrifices (Macintosh, 2002) and there are mixed findings concerning the research of these concepts.

Consumer perceived value is a multidimensional concept, which presents a trade-off between benefits and sacrifices perceived by the consumer (Woodruff et al., 1993; Zeithaml et al., 1996; Slater and Narver, 2000; Ulaga and Chacour, 2001).

In turn, perceived benefits are the combination of several attributes of the product (tangible and intangible; intrinsic and extrinsic, etc), regarding a particular purchase context. In other hand, perceived sacrifices are a mix of price and costs of product acquisition and its use (Monroe, 1990; Slater and Narver, 2000; Ulaga and Chacour, 2001).

In this research, Boris et al. (2004) focused on the relationship between perceived product quality, perceived product risks and perceived product value. The research model proposed by the authors is illustrated on the Figure 29.

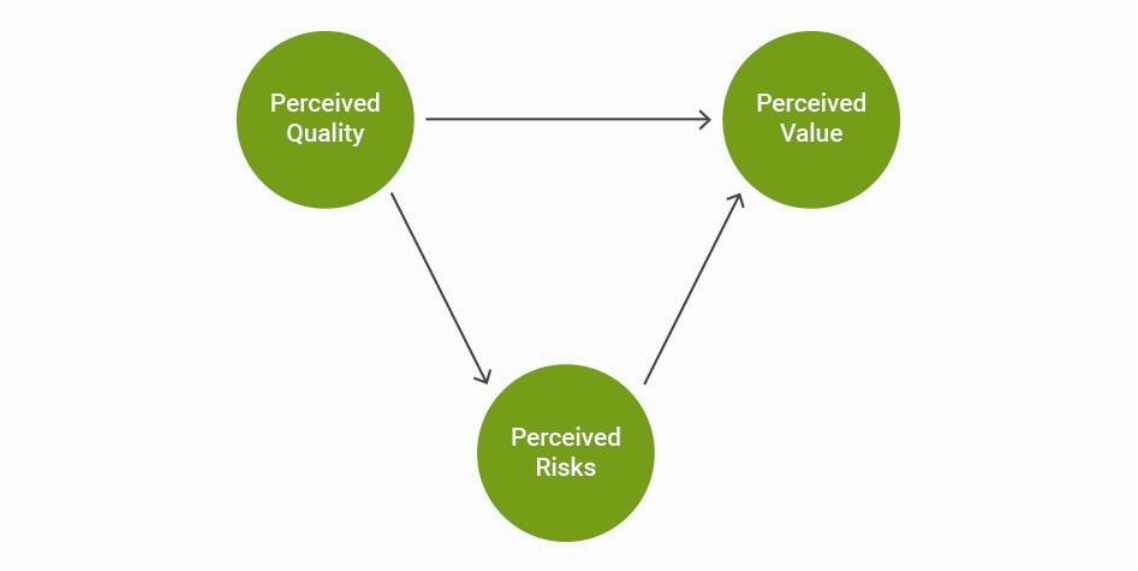


**Figure 29 - Conceptual Model regarding Perceived Value. Author: Boris et al. (2004).**

According to the authors, consumers purchase is a combination of attributes which derive value according to the utility (benefits) provided by the combination of attributes less the disutility represented by their sacrifices in obtaining the product.

Perceived value is conceptualized as a "customer's perceived net trade-off received from all relevant benefits and costs or sacrifices delivered by a product or service or supplier and its use" (Raghubir, 1998; Sinha and DeSarbo, 1998; Flint and Woodruff, 2001).

For Rowley (1998) perceived quality is as a form of an overall evaluation of a product and suggested that perceived quality acts as a global value judgment by the consumer.

Boris et al. (2004) findings indicate that perceived risks strongly influence perceived value of a product. To sum up, the authors' conclusions highlight that there is a close relationship between perceived risks and perceived value and risks can be used conceptually and practically in generating perceptions of perceived value.

3.3.2.3| Perceived Risks Dimensions

Risk is a multidimensional concept and researchers often use a multidimensional approach to the concept of perceived risk. Jacoby and Kaplan (1972) have identified five types of perceived risks:

1) **Financial:** Risk of losing money with the new product or risk of investing more money than one can expect to receive in return. Consumers when facing a purchase decision might face that they are losing money, because the product does not satisfy their expectations;
2) **Performance/functional:** Risk that a product might not work, not work properly or not work in the manner in which the consumer would like it to work; According to Sweeney et al. (1999) when making a purchase decision, consumers are always faced with some concern over the performance of the product since perfect information regarding future performance is never known and consumers consider these consequences as risk when developing perceptions of value;
3) **Physical:** Risk that the consumer injure him/herself or others through use of the product; For example, perceived physical risk is the possibility that a product might be harmful to individuals' health (Jacoby and Kaplan, 1972) or products do not look as good as the individuals expect (Simpson and Lakner, 1993);
4) **Psychosocial:** It is a combination between psychological and social. The psychological risks is the possibility that individuals suffer psychological stress associated with their purchasing behaviour. Social perceived risks is somehow to what extent consumer perceive as risky to choose a bad product which could have a negative impact on the consumer's ego; risk of choosing a product impacting consumer status with respect to friends, family and/or colleagues (Snoj et al., 2004). A risk that by choosing a product, a consumer's status will change among his friends and/or his family and/or his colleagues. Some authors consider psychological and social separated and others consider into one dimension (Boivin et al., 2011).
5) **Temporal:** Risk that time spent on searching for a product will be lost, if a product does not perform according to a consumer's expectations. Perceived time-loss risk is the possibility that people loose time because of their shopping behaviour and it is associated with convenience (Roselius, 1971 and Mumel 1999).

This multidimensional perspective was adopted by several perceived risk researchers (who also added time risk) who merged the work of Bauer (1960) and Jacoby and Kaplan (1972) by conceptualizing and measuring the uncertainty and consequences associated with each of these various types of perceived risk. As pointed out, each product has a set of risks associated and each consumer has an individual level of tolerance toward each one. On the Table 3, we can see the main prior studies that included perceived risks dimensions done in the past years.

**Table 3 - Perceived Risk Dimensions in Prior Studies. Source: Adapted from Lim (2003).**

| ***PRIOR STUDIES*** | | ***PERCIEVED RISK DIMENSIONS*** | | | | | |
|---|---|---|---|---|---|---|---|
| **Year** | **Author** | **Financial** | **Performance** | **Social** | **Physical** | **Psychological** | **Time-loss** |
| **1971** | **Roselius** | X | | | X | X | X |
| **1972** | **Jacoby and Kaplan** | X | X | X | X | X | |
| **1974** | **Lutz and Reily** | | S | X | | | |
| **1982** | **Korgaonkar** | S | | X | | | |
| **1985** | **Germunchen** | X | X | X | | | |
| **1990** | **McCorkle** | X | X | X | | | |
| **1993** | **Simpson and Larner** | S | X | X | X | X | |
| **1995** | **Darley and Smith** | X | X | X | X | X | |
| **1996** | **Jarvenpaa and Tod** | X | S | X | | | |
| **1996** | **Van den Poel and Leunis** | X | X | | | | |
| **1997** | **Fram and Grady** | S | | | | | |
| **1999** | **Korgaonkar and Wolin** | S | | | | | |
| **1999** | **Vellido et al.** | S | | | | | |
| **2000** | **Cheung and Lee** | X | | | | | |
| **2000** | **Tan and Teo** | S | | | | | |
| **2004** | **Snoj et al.** | X | X | X | X | X | |
| **2006** | **Mieres et al.** | S | S | X | X | S | S |
| **2011** | **Bolvin et al.** | X | X | S | X | S | X |

X: Dimensions included in studies; S: Dimensions found to be significant in the studies.

As per the Table 3, we can see that performance, financial and social risks are the most common risks included in the studies and financial and performance the ones that were more often found to be significant.

#### 3.3.2.4| Perceived Risks and the Purchase of Green Products

As seen previously, consumers are motivated to buy green to satisfy their needs of information, control, change and to express lifestyle. However, when facing a purchase decision, despite all the motivations, there are perceived risks that might affect their green purchase decision.

##### 3.3.3.2.4.1| *Financial Perceived Risks*

Economic concerns, more specifically the price, is considered by some authors one of the obstacles regarding green consumption (Schlossberg, 1992; Sriram and Forman, 1993; Ottman, 1994; Mainieri et al., 1997; Browne et al., 2000; Laroche et al., 2001; Fotopoulos and Krystallis, 2002; Holdworth, 2003; Pelsmaker and Janssens, 2007; Shaharudin et al., 2010; Young et al., 2010). Price continues to be cited as the main reason for not buying green products, despite a slight shift in this trend recently (Mintel, 1999; 2000; 2006).

Schlossberg (1992) adds that price is a determinant variable and consumers while making their purchasing choice might not overwhelm their primary concerns about employment and their income and adjust their choice within these parameters. Sriram and Forman (1993) also concluded that price sensitivity is a major barrier of green consumption. According to Ottman (1994), many consumers (environmentally concerned included) simply cannot afford to pay higher prices for green products. The author states that although green consumers understand the concept of the value for the money, sometimes they can’t afford paying in a short term to fix a long term problem.

Mainieri et al. (1997) indicated that marketers have found that even when consumers strongly support environmental protection, they are still extremely price sensitive when it comes to buying green.

According to Browne et al. (2000), it is estimated that 80% of the population would consume green products if prices are reasonable or if there is no additional effort required.

Laroche et al. (2001) have conducted an investigation with the aim to identify the profile of consumers who are likely to pay more for green products. They highlighted that the consumers that are likely to pay more for green products reveal higher ecological concern attitudes. These consumers consider the existing ecological problems as severe and that companies do not act as responsibly as they should regarding the environment protection. They also think that translating the concern into behaviour is important and not inconvenient. The authors also stress that consumers who are not willing to pay more for green products reveal the opposite preferences when compared to the ones that are likely to pay more.

Fotopoulos and Krystallis (2002) stated that the second major cause of non-preference has been organic products' high price.

Holdworth (2003) refers that price should be considered in broader perspective as a cost, and adds that the problem with cost is that it also hides other barriers such as inconvenience and habits. For instance, some people consider car driving as something essential and, consequently, they determine the cost of using public transportation as an extra expense rather as an alternative.

The consumer seems to be in favour of green but whether or not the consumer is willing to pay for green remains unanswered. The effects of the economic crisis is creating tension between the desire for high family value and supporting green products. This suggests the need for brands to respond to growing consumer demands for value of their green products. Shaharudin et al. (2010) explored the concept of value for the money in his study applied to organic food. It is argued that the higher prices of the green products are “fair” prices if we take in consideration the “true” value of the product. In the case of organic foods the higher prices are due to the different cultivation methods used as well as to minimize the inherent risks of the products. In this particular product category, the author says that consumer perceives the value of the products and they are willing to pay premium prices.

To sum up, the high prices that are usually associated to green products are believed to be a major barrier to green purchase behaviour (François-Valette and Florence, 2006; Bray et al., 2011; Boivin et al., 2011).

3.3.3.2.4.2| *Functional (Performance) Perceived Risks*

Research on consumer's attitudes towards green goods has produced conflicting results in its analysis of whether or not consumers believe green products are of lower or higher performance (Picket-Baker and Ozaki, 2008). The first green products that arrived into market in the 1970s such as recycled paper or detergents have raised some questions regarding the quality of green products. Shoemaker (2005) mentions that when natural green detergents were introduced at higher prices, the first impressions were that they wouldn't clean well, and would block consumers' washing machines. The same feeling was found regarding recycled products. Since they are manufactured with re-used materials, they were often perceived as lower quality (Biswas et al., 2000).

On the other hand, Peattie (1992) states that companies have progressively included environmental attributes on their products and they call it green product innovations and it is stated that product performance of this products are significantly better than conventional ones.

Sriram and Forman (1993) argue that consumers place less value on products' environmental performance in the case of purchasing high involvement products than in the case of frequently purchased products. Some researches made reveal that the consumption of green products fail somehow due to the perceived product performance by the consumer. Ottman (1998) indicates that 41% of consumers do not buy "green" products because of their perceived inferiority, mentioning a study of observable and product-specific information (e.g. use of biodegradable and recycling behaviour) by Roper StarchWorldwide (RSW). This leads to the assumption that consumer is not willing to sacrifice the performance of the product when they face a product decision. Basically, the functionally of the product and its quality is something that needs to be kept and environmental attributes are often seen as an add-on to the products.

Alston and Roberts (1999) made a research about environmental strategy and new product development and they found that consumers prefer to pay more for environmental attributes (in the case it was cleaning products) than to sacrifice product performance.

Furthermore and according to Manget (2009), grouping green products into one category is not accurate because consumers' attitudes toward green products vary between industries. The author mentioned BCG's study as an example, since it looked at ingestible products, products applied to the body, wearable products, plug in products and disposable products. Although results varied between products almost half of the respondents in the countries surveyed indicated that green products offer comparable or superior quality over conventional alternatives.

Boivin et al. (2011) concluded on their research that functional perceived risks regarding green product was partly verified, since it varied from category to category.

In this sense, and according to what was mention before, except for food and beverage and products that are perceived as working better when compared to conventional in other product categories there is no consensus.

#### 3.3.3.2.4.3| *Temporal (Convenience) Perceived Risks*

Temporal perceived risks are related with the time spent on searching for a product (Roselius, 1971; Mumel, 1999).

Regarding to green products, a major barrier for consumers is the inconvenience of undertaking green consumption actions.

Convenience is seen as a perceived as a risk as it refers to how inconvenient it is perceived by the individual to behave in an environmentally friendly way (McCarty and Shrum, 1994; 2001; Laroche et al., 2001). For example, a person may feel that recycling is important for the long-run of the society but may also feel that it is personally inconvenient. Fotopoulos and Krystallis (2002) also stress that inconvenience was the major cause of organic products' non-purchase due to its low availability. Convenience as a perceived risk in the present study is meant by the extra effort (time, changing routines) that consumers have to do to purchase green products.

The concept of convenience appeared firstly in the use of marketing related to those intensively distributed products that required minimal time and physical and mental effort to purchase. Some researchers viewed convenience as an attribute that reduces the nonmonetary price of product such as time and energy expenditure (effort) consumers used in purchasing a product rather than a characteristics or attribute of a product (Brown, 1990). In the context of green purchases, an individual who supports the “importance” of being environmentally friendly and feels “convenience” to act in an environmental friendly manner is more likely to buy and pay more for environmentally friendly products or green products (Laroche et al., 2001; Cheah and Phau, 2006).

Agyeman and Kollmuss (2002) also found habits and routines as part of the inconvenience to be the biggest obstacle to green consumption. Daily habits and routines often inhibit consumers from changing their consumption patterns. Changing their habits and routine are seen as inconvenient and are closely related with their priorities, thus, often time, friends and financial resources that are valued higher than the ones related to environmental protection.

Holdsworth (2003) also points out that there is a generation factor since older people might feel that they have already done their share for the society and now they want to enjoy the rest of their lives without any inconvenience that green consumption might incur.

Lack of time is also seen as inconvenient to buy green products and it was listed as the first of five main barriers by the interviewees for purchasing greener products in the study conducted by Biel and Dahlstrand (2005). The findings of Young et al. (2010) also confirm lack of time for research, decision-making and the purchase as the first of five main barriers to purchase green products.

De Pelsmacker et al. (2005) also identified lack of availability of green products, disbelief of green claims and lack of information as the main reasons for less green consumption.

Also the study conducted by Grail Research (2011) pointed out that although consumers state they care about companies being green, only 11% reported seeking information about green products and practices on a regular basis. Mainly consumers rely on the sources of information that are most convenient to them, such as product labels. This means that looking for the information can also be inconvenient.

According to the findings of the study conducted by Durif et al. (2009), consumers perceive risks regarding green products, specifically with regard to the temporal aspects associated with the purchase of green products.

To sum up, time/convenience perceived risks is one of the most commonly mentioned reasons appointed by the consumers that are not willing to change their behaviour to a greener one. Some consumers argue that they simply do not want to change their behaviour because they don't want to make extra efforts (time, changing routines and habits).

#### 3.3.3.2.4.4| *Physical Perceived Risks*

Physical perceived risks refer that the consumer injure him/herself or others through use of the product, for example by perceiving a degree of risk to damage his/her health by consuming certain products.

Padel and Foster (2005) explored the values that underlie consumers purchasing decisions applied to organic food and also analyse the facilitators and barriers to organics consumption. The results of their study indicated that health is an important factor for consumers when buying organics.

Hailes (2007) also indicates that for certain product categories consumers avoid buying products that they perceive as risky to health, damage the environment during production, use or final disposal, consume much energy, have excessive packaging, and contain ingredients coming from threatened habitats or species.

Boivin et al. (2011) also found out that physical risks can act as facilitators to green purchase behaviour, since green products are believed to better for consumer's health than conventional ones.

#### *3.3.3.2.4.5| PsychoSocial Perceived Risks*

Psychological perceived risk is somehow to what extent consumer perceive as risky to choose a bad product which could have a negative impact on the consumer's ego.

As we have seen before, the 90s was when psychographic characteristics were put in evidence in an attempt to identify the profile and motivations of green consumers. According to Stern et al. (1993) environmentally relevant behaviours may derive from three distinct value bases: the welfare of others (altruism), the self (egoism) and all living things (biospherism).

Using the conflicts between self-transcendence (socio-altruistic motives that are assumed to be positively related to environmental-friendly attitudes and behaviours) and self-enhancement (egoistic motives that are assumed to be negatively or insignificantly related to them) value domain, researchers have investigated why people engage in pro-environmental actions more or less (Stern et al., 1993; Schwartz, 1992; 1994). Self-transcendence aspects such as altruism were found to be significant to characterize green consumer behaviour (Roberts, 1996; Straughan and Roberts, 1999). This means that the purchase of green products might be perceived as positive for consumer's ego and act as a facilitator of green consumption.

Social risk relates to how the purchase decision will affect the opinions other people hold about the shopper. Thus, it varies with such factors as the social conspicuousness and social relevance of the product.

Some studies revealed that social pressure induced pro-environmentally behaviours. For example, homeowners have reduced energy consumption after receiving reports that compare their usage to neighbors (Allcott, 2009; Ayres et al., 2009), and hotel guests reduce demand for clean towels when they are told the majority of their peers have done the same (Goldstein et al., 2008).

Another social aspect related to green consumption is the status conferred upon demonstration of environmental friendliness. For example, in USA, some homeowners are known to install solar panels on the shaded sides of houses so that their costly investments are visible from the street. And the same happened with the introduction of the Toyota Prius in 2001. A growing number of vehicle models have been introduced with features that reduce environmental impacts, particularly greenhouse gas emissions and these attributes were perceived by consumers as a way to attain status that can generate economic rewards and intrinsic value (Hardy and Van Vugt, 2006; Van Vugt et al., 2007).

Griskevicius and Van den Bergh (2010) on their research found that while consumers are more likely to "go green" on the street where they can be seen making altruistic choices, the privacy of online shopping shows a different purchase behaviour. According to the authors, when consumers are being watched by their peers they are more willing to demonstrate green purchase behaviour. For instance, they discovered that people were more likely to buy energy efficient light bulbs from the shops, but tended to opt for the conventional ones online.

As we have seen on previous chapter, Gupta and Ogden (2009) found that the decision to purchase green products presents itself as a social dilemma influenced by reference group effects and is driven by the motivation to maximize collective rather than individual gain. Results from the study reveal that several characteristics of the individual - trust, in-group identity, expectation of others' cooperation and PCE - were significant in differentiating between "non-green" and "green" buyers. Findings from the study indicate that green buyers generally are high trusters and expect that others would also engage in green buying behaviour.

Boivin et al. (2011) found that psychosocial risks were found to have a significant impact on the purchase of socially responsible goods.

## 3.4| The Effect of Cultural Values

On this sub-chapter the effect of cultural values is analyzed with the aim to understand the role that individualism and collectivism might have on the relation between environmental concern attitudes and green purchase behaviour (see Figure 30).

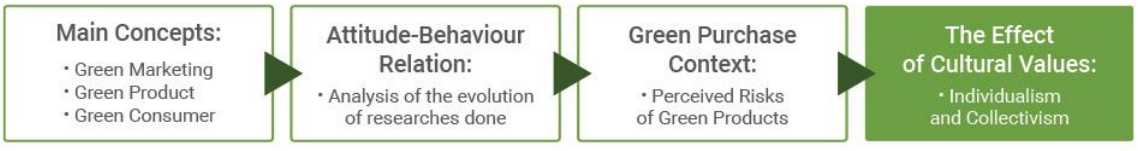


**Figure 30 - Literature Review – Green Purchase Context.**

According to Laroche et al. (2005), many studies have shown that cultural values should be included in the study of consumer behaviour. As a matter of fact, several

researchers have demonstrated the influence of culture in marketing field (Ueltschy and Ryans, 1997; Heslop et al., 1998; Griffith et al., 2000; Ackerman and Tellis, 2001, among others). McCarthy and Shrum (2001) point out the importance that culture has in the management perspective. They argue that management has a technical and a human facet and although the technical side of management is less culture-dependent than the human side, since the two interact, there is no management activity culture-free.

Among marketing and international researchers, Hofstede (1980, 1991) and Hofstede and Bond (1988) dimensions of culture are the most widely accepted. According to these authors there are five dimensions of culture, namely: power distance, uncertainty avoidance,masculinity/femininity, long-term orientation and individualism/collectivism.

On this sub-chapter we will analyse the existing literature regarding collectivism and individualism, its definitions and its relation with green consumption.

### 3.4.1| Culture and Cultural Values Definition

One of the first definitions of culture was provided by Tylor (1871, in McCort and Malhotra, 1993: 97) that advocates that culture is “the complex whole which includes knowledge, belief, art, morals, custom and any other capabilities and habit acquired by man as a member of society”. According to this definition, culture is seen as a broader perspective considering different areas of the society.

Nevertheless, culture has been defined several ways. According to McCarty and Shrum (2001), culture is the “collective programming of the mind which distinguishes the members of one group or society from those of anothers. Culture is reflected in the meanings people attach to various aspects of their life and their way of looking at the world and their role in it”. When compared with the previous definition presented, we can see that one common aspect between the definitions which is culture as a set of areas like knowledge, beliefs, etc, that can enable to distinguish one societal group from another. McCarty and Shrum (2001) add that culture is preserved in the institutions and tangible products of a society, which reinforce its mental programmes. The authors also argue that management within a society is influenced by its cultural context and in order to coordinate the actions of the individuals it is crucial to understanding their values, belifs and expressions.

The influence of culture on consumption and marketing has been in foccus on the recent years. Hofstede's model (1984, 1991, 2001) is the most extensively used national cultural framework in psychology, sociology, marketing, or management studies (Soares et al., 2007). Initially it was applied to analyze work related values in the human resources field. Hofstede's research involved data collection of 116,000 questionnaires from over 88,000 employees from 72 countries (reduced to 40 countries that had more than 50 responses each) in 20 languages at IBM between 1967 and 1969 and again between 1971 and 1973. The author expanded later the database with 10 additional countries and three regions. Arab countries and East and West Africa. As mentioned before, he created five cultural dimensions (individualism/collectivism; uncertainty avoidance; power distance; masculinity–femininity and longterm orientation), allocated indexes on each to all nations, and associated the dimensions with demographic, geographic, economic, and political aspects of a society.

Due to the large number of the national culture sample, this framework is known as one of the most comprehensive and robust to analyse cross-cultural studies (Smith et al., 1996). In the marketing field, Hofstede's operationalization of cultures became the norm (Engel et al., 1995; Sivakumar and Nakata, 2001; Soares et al., 2007).

### 3.4.2| Individualism and Collectivism

The present study will focus on the effect of individualism/collectivism on the relation between environmental concern attitudes and green purchase behaviour. The reason for this option is related to the fact that the recent reviews of the cross-cultural literature have concluded that individualism/collectivism is the most proeminent dimension compared to the others (Gelfand et al., 2007) which puts in evidence that individualism/collectivism might have stronger predictive power than the other dimensions in empirical research. According to Triandis the individualism/collectivism dimension is not only useful for comparing cultures, it is also suitable for groups comparison within a specific culture (Triandis et al., 1989), which is the case of this reasearch.

The individualism/collectivism dimension define the relationship that individuals have in each culture and "the degree to which people in a country prefer to act as individuals

rather than as members of groups" (Hofstede, 1994). Individualism is "a loosely knit social framework in which people are supposed to take care of themselves and of their immediate families only," and collectivism "is characterized by a tight social framework in which people distinguish between ingroups and outgroups, they expect their ingroup to look after them, and in exchange for that they feel they owe absolute loyalty to it" (Hofstede, 1980b).

It is important to highlight that the word collectivism is not used in Hofestede's work to describe any particular political system, but to assess to the degree of interdependence a society mantains among individuals. Triandis (1994) argues that both individualism and collectivism can coexist and are simply emphasized more or less in each culture, depending on a specific context. In other words, individualism/collectivism relates to people's self concept: "I" or "We" on a certain situation (Hofstede, 2004).

On a broader cultural perspective the view of the self in relation to others can vary. For instance, while in individualist cultures, a strong "I" consciousness and self-actualization is valued, and individuals are encouraged to express private opinions, in the collectivist cultures there is a "we" consciousness were group decisions are preferred to individual decisions, and maintaining in-group harmony (de Mooij, 2004).

According to de Mooij (2004), even the notion of person is different between individualist and collectivist cultures. On the individualist culture, the person is defined as an autonomous entity with distinguishing qualities. For collectivist cultures, the person is characterized as an interdependent entity, and "the self cannot be separated from others and the surrounding social context".

Since "others" are so important for interdependent individuals, the in-group/out-group distinction is relevant and the boundary of one's in-group may tend to be narrower for them compared to independent individuals (Triandis, 1989, 1994). In sum, "the degree to which an individual feels connected to others will have an impact on the formation of the individual's self which in turn, will regulate his/her behaviour" (Toffoli, 1997).

According to Triandis (1989), the individuals characterized by a collectivist orientation do not distinguish between personal and collective goals, or, of they do, personal goals are subjugated to the goals of the collective and, on the other side, individualists are defined by the propensity to prioritize individual goals over group goals.

Yamaguchi (1994) has also defined a person's collectivism as the predisposition to give priority to the collective self over the private self, especially when the two come into conflict. Individualists, in contrast, have flexible ties to social groups, and their behaviour is often guided by self-interest (Triandis, 1995). This means when group and an individualistic person's goals are in conflict, personal goals often have primacy.

In this present study, for the operationalization of this dimension the individualism/collectivism at the individual level of analysis is used (Triandis, 1995; Earley and Gibson, 1998; Oyserman et al., 2002), known as CVSCALE (Donthu and Yoo, 1998; Boonghee et al., 2011).

### 3.4.3| The Relation between Individualism/Collectivism and Environment

As we have seen previously, in terms of definition, collectivism is similar to altruism but it is understood as a cultural value, as a sense of interdependence of the human being. Several authors argue that collectivistic individuals tend to have more pro-environmental attitudes and behaviours (Chan, 2001; McCarthy and Shrum, 2001; Kim and Choi, 2005; Gupta and Ogden, 2009; Kim, 2011).

Schultz and Zeleny (2000) argue that "attitudes of environmental concern are rooted in a person's concept of self and the degree to which an individual perceives him or herself to be an integral part of the natural environment" and green purchase decisions are often based on consumer’s environmental attitudes (Schwepker and Cornwell, 1991).

In other words, individualism and collectivism are basic beliefs that people have regarding to their interaction with others and the world. According to Triandis (1994), when studied at the cultural level, individualism and collectivism are considered to represent opposite ends of one continuum, and cultures are often described as being either individualistic or collectivistic in their orientation. However as stated before, on the present research individualism and collectivism will be analyzed from an individual perspective. Researches done so far refer that individualism and collectivism represent separate dimensions and both can exist within the same culture (Triandis, 1994; Donthu and Yoo, 1998; Earley and Gibson, 1998; Oyserman et al., 2002; Boonghee, 2011). Different situations may cause a person to sample individualistic or collectivistic tendencies (Triandis, 1989, 1994). Individualism and collectivism can

coexist within a person and an individual can be high in both individualism and collectivism. As Trafimow et al. (1991) state, different contexts can influence whether people embrace either their collectivistic or individualistic selves.

According to Markus and Kitayama (1991) individualist persons tend be "egocentric, separate, autonomous, idiocentric, and self-contained" and a collectivist person tend to be interdependent and perceives that behaviours are determined by the thoughts, feelings, and actions of others.

The conclusions of Chan's (2001) research indicated that collectivism had influence on environmentally purchase behaviour. Kim (2011) also state that cultural values as man-nature orientation and collectivism, ecological affect, and ecological knowledge (less evident) have significant impact on attitudes toward green purchases. As mentioned previously, this author investigated the determinants of green buying behaviour by using a person's value system and person-level tendencies of collectivism or individualism appear to influence the motivation of consumers to engage in environmentally conscious behaviours.

# 4| CONCEPTUAL MODEL AND HYPOTHESES

In this chapter the conceptual framework and the hypotheses of this investigation are presented.

## 4.1| Theoretical Framework

As stated in previous chapters, the objective is to explore and better understand green purchase behaviour. The literature review has shown that there is a gap between environmental attitudes and purchase of green products. In other words, consumers consider themselves environmentally concerned (attitudes) but they are reluctant into translating it into purchases (behaviour). This gap is called “a-b gap” and the aim of this study is to understand why consumers “talk the talk but don’t walk the walk”. Although, the attitudinal-behavioural literature is controversial and environmental attitudes is considered to be a determinant of green purchase behaviour. Between this relation are other factors such as perceived risks and cultural values that might determine the strengh of this relation. On this study, the aim is also to understand which of these risks affects most the global risks perception and also to include cultural values into analysis, more specifically, the role that collectivism/individualism matrix might have in this relation.

Based on the theoretical discussion on literature review made, we stated several hypotheses of this study namely:

**H1. There is a positive relation between Environmental Attitudes and Green Purchase Behaviour.**

The research in green consumption faces some paradoxes. In one hand there is a lack of evidences in consumer attitude theory with results that support both a positive relationship between attitude toward the environment and behaviour (Kellgren and Wood, 1986; Straughan and Roberts, 1999; Kim and Choi, 2003) as well as environmental attitude and green purchase behaviour (Grunert and Juhl, 1995; Schlegelmilch et al., 1996; Kellgren and Wood, 1986; Kim and Choi, 2005; Tilikidou,

2007). As stated previously in literature review chapter there is usually a gap between what green consumers thinks and how they act.

On other hand there are weak relationships between environmental attitudes and green purchase behaviour that were also proved to exist (Webster, 1975; Hines et al., 1987; Mainieri et al., 1997; Tanner and Kast, 2003; Mintel, 2006).

For instance, a study conducted by Hines et al. (1987) has shown that lower attitude-behaviour correlation was found when attitude was consider as a general environmental attitude. Schlegelmilch et al. (1996) also concluded that the attitudes revealed to be the most consistent inducer of green purchase behaviour. Kim (2011) indicates that environmental attitudes are important determinants of green purchase behaviour.

In this sense, it is expected that the relation between environmental attitudes and green purchase behaviour will be positive, as stated on H1.

**H2. Global Perceived Risks perception mediates the effect of environmental attitudes toward Green Purchase Behaviour.**

Perceived risk is going to be analysed as a second order construct that include the subjective evaluations of unfavorable consequences and global risks perception includes finantial, physical, performance, temporal, psychosological aspects of consuming a green product (Dowling and Staelin, 1994; Jacoby and Kaplan , 1972; Yuksel and Yuksel, 2007).

Perceived risk is assessed as an overall perception that consumers face in terms of the magnitude of consequences and the probabilities that these consequences may occur if the product is acquired (Dowling and Staelin, 1994).

The role of the construct is also discussed as a mediator between attitude and behaviour (Campbell and Goldstein, 2001; Gurhan-Canli and Batra, 2004), as H2 hypothesizes.

**H3. The effect of Environmental Attitudes on Green Purchase Behaviour will be stronger with higher degrees of Collectivism vs. Individualism.**

As we have seen previously, in terms of definition, collectivism is similar to altruism but it is understood as a cultural value, as a sense of interdependence of the human being. Several authors argue that collectivistic individuals tend to have more pro-environmental attitudes and behaviours (Chan, 2001; McCarthy and Shrum, 2001; Kim and Choi, 2005; Gupta and Ogden, 2009; Kim, 2011).

The conclusions of Chan's (2001) research indicated that collectivism had influence on environmentally purchase behaviour. Kim (2011) also state that cultural values as man-nature orientation and collectivism, ecological affect, and ecological knowledge (less evident) have significant impact on attitudes toward green purchases.

H3 is about the moderator effect of individualism and collectivism on environmental concern attitudes and green purchase behaviour. The reason for this option is related to the fact that the recent reviews of the cross-cultural literature have concluded that individualism– collectivism is the most proeminent dimension compared to the other cultural dimensions (Gelfand et al., 2007). This fact puts in evidence that individualism/collectivism might have a strong predictive power to explain pro-environmental behaviour and, even further, it might have a moderator impact on the relation between environmental attitudes and purchase behaviour.

The relationships between the concepts are placed in a theoretical framework and hypotheses related to each are addressed on the conceptual model below:

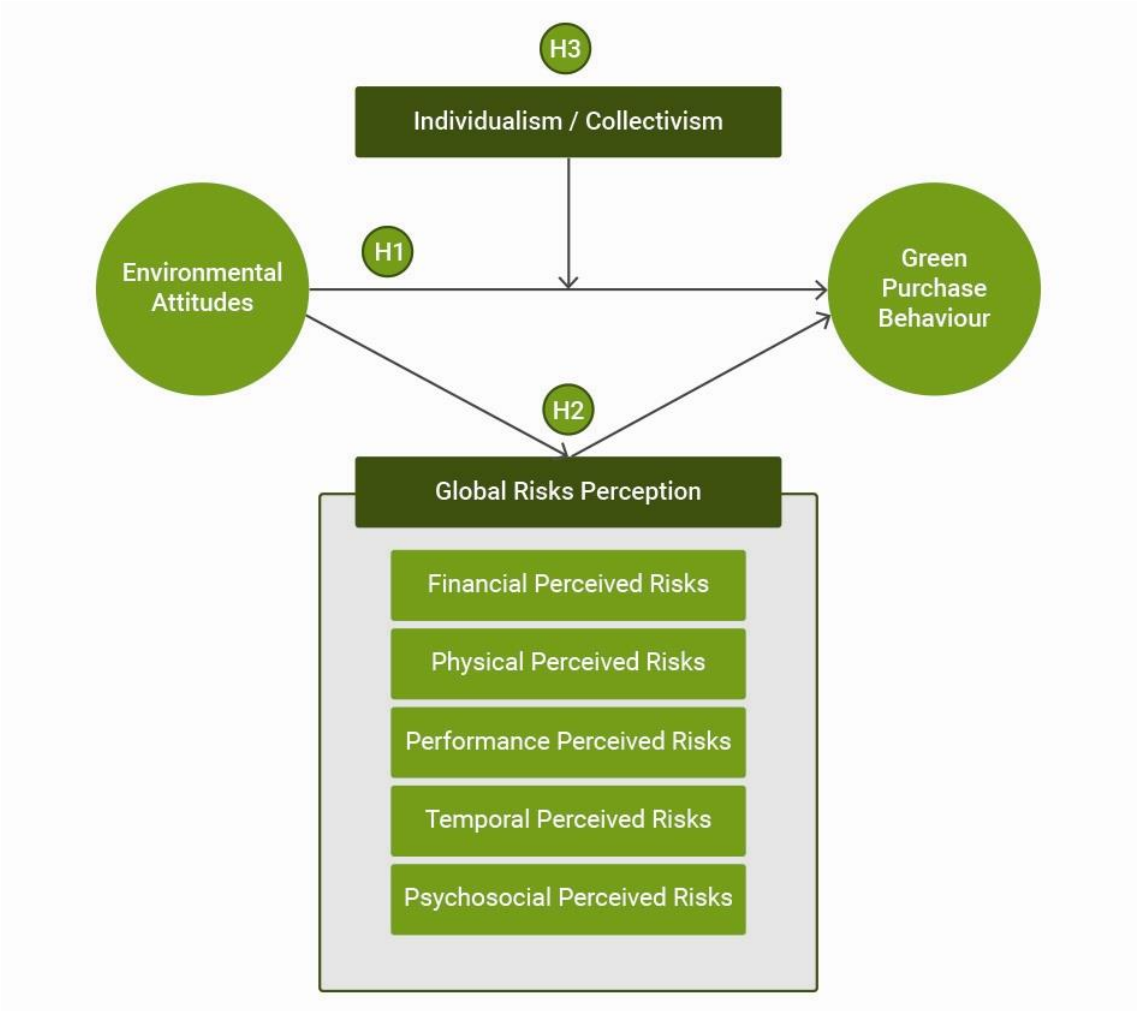


**Figure 31 - Conceptual Model.**

# 5| METHODOLOGY

The purposes of this chapter are (1) to present the research methodology of this study, (2) to describe the procedure used in designing the instrument and collecting the data, (3) to explain the sample selection, and (4) to provide an explanation of the statistical procedures used to analyze the data.

## 5.1| Research Instrument

### 5.1.1| The Questionnaire

This research used a structured questionnaire that took into account the information needs and the data collection method chosen, that was an online questionnaire (see Appendix 3).

Smith (1999) notes that it should give special attention to biases due to the response style. So, the construction of the questionnaire was carefully designed to motivate the answer and minimize possible errors and misunderstandings.

Efforts were made so to assure that the questions were as clear and uniform as possible, to prevent that different meanings could create some confusion among respondents, yielding fewer correct answers.

Though, an attempt was made to make sure that wordings of the attributes were clear, objective and not very long, following some authors' recommendations (Malhotra, 1999; DeVellis, 1991). It should be noted that the final part of the questionnaire consisted of socio-demographic characterization data. The questionnaire was subjected to a pre-test before the launch.

### 5.1.2| The Measures

The measures were adapted from previous studies. In this questionnaire the Likert scale was used, so that the respondents could classify their position on each one of the questions. According to Malhotra (2006), this scale, widely used, requires

respondents to indicate a degree of agreement or disagreement with each of a series of statements. All of the items were measured on a 7-point Likert scale, where 1 represents “strongly disagree” and 7 represents “strongly agree”.

The English questionnaire was translated and then reviewed by professional translators into Spanish and Portuguese. In order to ensure the questionnaire captured the same meanings across languages, considerable effort was undertaken to ensure conceptual comparability. Translators were asked to make conceptual, rather than literal translations.

The professional questionnaire service, Qualtrics (www.qualtrics.com), was used to create an online survey and to ensure data protection.

Environmental Attitudes scale was measured by five items (Table 4) adapted from Kilbourne and Picket (2007).

**Table 4 - Environmental Attitudes (ECA). Author: Adapted from Kilbourne and Pickett (2007).**

| *CODE* | *ITEM* |
|---|---|
| ***ECA_1*** | I am concerned about the environment. |
| ***ECA_2*** | I would be willing to reduce my consumption patterns to protect the environment. |
| ***ECA_3*** | I would be able to donate some money to contribute to the protection of wildlife. |
| ***ECA_4*** | I have asked my family to recycle some of the products we use. |
| ***ECA_5*** | I intend to change my consumption patterns to protect the environment. |

Green Purchase Behaviour was measured by five items (Table 5) adapted from Kilbourne and Picket (2007).

**Table 5 - Green Purchase Behaviour (GPB). Author: Adapted from Kilbourne and Pickett (2007).**

| *CODE* | *ITEM* |
|---|---|
| ***GPB_1*** | I buy "environmentally friendly" products whenever possible. |
| ***GPB_2*** | I buy biological products whenever possible. |
| ***GPB_3*** | I use products made from recycled materials whenever possible. |
| ***GPB_4*** | I have the concern to reduce waste at home whenever possible. |
| ***GPB_5*** | I try to recycle waste at home whenever possible. |

Global Perceived Risk is proposed as second-order reflective construct and it includes financial, physical, performance, convenience and psychosocial perceived risks that are first order constructs (Featherman and Pavlou, 2003).

Financial perceived risks were measured by three items (Table 6) adapted from Boivin et al. (2011).

**Table 6 - Financial Perceived Risks. Author: Boivin et al. (2011).**

| *CODE* | *ITEM* |
|---|---|
| ***FIN_1*** | These products are expensive compared to products that are not environmentally friendly. |
| ***FIN_2*** | Usually there is a need to pay more for these products. |
| ***FIN_3*** | These products have a high price even taking into account its value. |

Physical perceived risks were measured by three items (Table 7) adapted from Boivin et al. (2011). All items were later reversed.

**Table 7 - Physical Perceived Risks. Author: Boivin et al. (2011).**

| *CODE* | *ITEM* |
|---|---|
| ***PHY_1*** | These products are good for my health. |
| ***PHY_2*** | There are fewer side effects to my health when I use / consume these products. |
| ***PHY_3*** | These products are better for my health than regular ones. |

Performance perceived risks were measured by four items (Table 8) adapted from Boivin et al. (2011). All items were later reversed.

**Table 8 - Performance Perceived Risks. Author: Boivin et al. (2011).**

| *CODE* | *ITEM* |
|---|---|
| ***PER_1*** | The environmentally friendly products are of superior quality compared to regular ones. |
| ***PER_2*** | These products are more efficient than regular ones. |
| ***PER_3*** | These products are more effective than regular ones. |
| ***PER_4*** | Overall, regarding the quality of these products are better. |

Temporal (convenience) perceived risks were measured by four items (Table 9) adapted from Boivin et al. (2011).

**Table 9 - Temporal (convenience) Perceived Risks. Author: Boivin et al. (2011).**

| *CODE* | *ITEM* |
|---|---|
| ***CON_1*** | These products are often difficult to find for sale. |
| ***CON_2*** | I usually have to look for these products in several stores to find it. |
| ***CON_3*** | These products are hard to find inside the store. |
| ***CON_4*** | I spend some time in the store before buying them, as first I want to read the information and compare them. |

Psychosocial perceived risks was measured by seven items (Table 10) adapted from Boivin et al. (2011). All items were later reversed.

**Table 10 - Psychosocial Perceived Risks. Author: Boivin et al. (2011).**

| *CODE* | *ITEM* |
|---|---|
| ***PSI_1*** | To buy these products increases my self-esteem. |
| ***PSI_2*** | To opt for these products brings me personal satisfaction. |
| ***PSI_3*** | These products improve the image I have about myself. |
| ***PSI_4*** | To choose these products gives me a greater sense of acceptance by others |
| ***PSI_5*** | Other people react positively when they know that buy these products. |
| ***PSI_6*** | I believe that when buying these products have a positive impact on my image in society. |
| ***PSI_7*** | To opt for these products contributes to an improvement of the image that others have of me. |

Individualism/Collectivism scale was measured by six items (Table 11) adapted from Boonghee et al. (2012). As mentioned previously, all of the items were measured on a 7-point Likert scale, where 1 represents “strongly disagree” and 7 represents “strongly agree”. The highest values correspond to collectivist orientation, whereas the opposite correspond to individualist.

**Table 11 - Collectivism. Author: Boonghee et al. ( 2012).**

| *CODE* | *ITEM* |
|---|---|
| ***COL_1*** | People should sacrifice their personal interests for the interests of their group. |
| ***COL_2*** | People must prefer the interests of the group even if it means going through difficulties. |
| ***COL_3*** | The welfare of the group is more important than individual reward. |
| ***COL_4*** | The group's success is more important than individual success. |
| ***COL_5*** | People should only seek to achieve their personal goals after considering the welfare of the group. |
| ***COL_6*** | The feeling of loyalty to the group should be encouraged even if individual objectives are affected. |

### 5.2.| Sample and Procedure

Before the sample definition it is necessary to define the target population. According to Malhotra (2006), the population is the collection of elements or objects that possess the information sought by the investigator and on which should be made inferences.

In this sense, the target population of this study consists of individuals of both sexes, aged up to 18 years old, residents in Portugal and Spain, potentially environmentally conscious.

The sample used for the present research was a non-probabilistic convenience sample. According to Malhotra (2006), the convenience sampling technique is a non-probabilistic technique that seeks to obtain a sample of convenient elements. The selection of sampling units is left to the researcher. As strengths, the author highlights: lower financial charges, less time consuming and more convenient.

Regarding our sample, respondents were adults (≥ 18 years) potentially environmentally conscious and residents in Portugal and Spain.

The study was conducted from January to May 2015. Before launching the pre-test, a focus group was made (see the script in Appendix 1). This focus group was held on an informal way with the specific purpose to understand participants' green consumption behaviour and better evaluate the questionnaire adequacy. The focus group was implemented face to face in ISEG/University of Lisbon with a group of six people with

diverse socio-demographic characteristics. Since the purpose was very specific, the result of it was the decision to focus the questionnaire on the purchase of green products that are usually bought in supermarket (like food, beverage, personal care, home cleaning products, etc), since these products were the most frequently bought and mentioned by the participants.

Two weeks after, the pre-test was launched with the purpose to identify and solve problems that might occur with scales and to understand if there might be any difficulties of understanding and other possible constraints like the length or the formulation of the questions.

An email sent was with the hyperlink to the questionnaire and a covering e-letter explaining the purpose of the study and providing assurance of the confidentiality of responses in each questionnaire. A total of 40 emails were sent, yielding usable 29 questionnaires.

Some analysis to pre-test were made to verify the internal consistency of the measures. The results were acceptable (see Appendix 2), and also some language adaptations were incorporated.

Subsequently, final questionnaire was released (see Appendix 3). The questionnaire was actively promoted in collaboration with some local biological supermarkets. The questionnaire was self-administered by the respondents that spent online an average of 12 minutes to complete it. The data was collected during March and April 2015.

# 6| RESULTS AND ANALYSIS

The purposes of this chapter are (1) to analyse missing data and normality of the variables (2) to present descriptive statistics analysis, (3) to characterize the respondents' profile, (4) to ascertain exploratory factor analysis (5) and to proceed with confirmatory factor analysis.

Missing data, descriptive statistics analysis, normality of data and exploratory factor analysis were obtained and analysed through SPSS 20.0 software for Windows.

Exploratory factor analysis with Principal Component Analysis was performed with the purpose to assess firstly the dimensionality of the measures, as indicated by Ping (2004) and Gerbing and Anderson (1988).

Then, confirmatory factor analysis models were assessed. Structural equation modeling (SEM) was performed to test the hypotheses using SPSS Amos 18.0, with maximum likelihood estimation method. The measurement model is first estimated to assess factor structure, reliability, and convergent and discriminant validity. Then, the structural models were estimated to test direct effects, mediation and moderation effects.

## 6.1| Missing Data

Although the responses were mandatory on the questionnaire, some respondents did not completed it. Therefore, before conducting the exploratory factor analysis, missing data needs to be analysed. It must be determined if missing data is systematic (represent bias) or can be ignored. Little's missing completely at random (MCAR test) (Little and Rubin, 2002), which is a chi-square test for missing completely at random was used for the analysis.

Little's MCAR test was run on the full 768 questionnaire responses, resulting in $\chi 2$=770,260, *df*=738, *p*=0,199. This statistically nonsignificant result indicated that unanswered questionnaire questions did not follow any systematic patterns, and consequently, incomplete records could be deleted without biasing the data

(Tabachnick and Fidell, 2007). Furthermore, a manual check was undertaken to remove potentially bug responses.

To sum up, in total, there were 768 respondents, of which 735 were complete and therefore used in the study.

## 6.2| Normality of Data

Most statistics used in SEM assume a multivariate normality of data distribution. Testing whether the assumptions for multivariate normality are met is impractical as it involves examining an infinite number of linear combinations. One solution is to examine the distribution of each observed variable (Kline, 2005).

The parametric tests are robust to lower absolute values of skewness to 3 and absolute values of kurtosis inferior to 7-10 (Kline, 1998). Therefore, the analysis of skewness and kurtosis (Table 12) indicate that data tend to a normal distribution.

**Table 12- Skewness and Kurtosis.**

| | ***SKEWNESS*** | ***KURTOSIS*** |
|---|---|---|
| **Environmental Attitudes** | -1,222 | 3,032 |
| **Green Purchase Behaviour** | -1,099 | 1,153 |
| **Financial Perceived Risks** | -0,940 | 1,166 |
| **Physical Perceived Risks** | 0,036 | 2,461 |
| **Performance Perceived Risks** | 0,607 | 0,518 |
| **Convenience Perceived Risks** | -0,387 | 0,073 |
| **Psychosocial Perceived Risks** | 0,575 | -0,090 |
| **Individualism/Collectivism** | -0,662 | 0,419 |

## 6.3| Descriptive Statistics Analysis

Table 13 provides the mean and standard deviation scores of the constructs adopted in this study. Respondents were asked to rate each item on a 7 point scale ranging from strongly disagree (1) to strongly agree (7). Overall, the mean scores for the eight scales shows positive mean values which ranged from 3,35 to 5,89.

**Table 13 - Descriptive Statistics for each variable.**

| | *N* | *MEAN* | *STD. DEVIATION* |
|---|---|---|---|
| **Environmental Attitudes** | 735 | 5,89 | 0,87 |
| **Green Purchase Behaviour** | 735 | 5,38 | 1,26 |
| **Individualism/Collectivism** | 735 | 4,47 | 1,31 |
| **Financial Perceived Risks** | 735 | 5,52 | 1,17 |
| **Physical Perceived Risks (r)** | 735 | 3,39 | 1,09 |
| **Psychosocial Perceived Risks (r)** | 735 | 3,99 | 1,35 |
| **Temporal Perceived Risks** | 735 | 4,85 | 1,16 |
| **Performance Perceived Risks (r)** | 735 | 3,35 | 0,62 |
| **Valid N (listwise)** | 735 | | |

**Legend: (r) reversed**

## 6.4| Respondents' Social-Demographics

As aforementioned, in total there were 735 valid respondents. According to Table 14, males comprised about 47,21 % of valid respondents, while female are 48,70 %.

**Table 14 - Gender.**

| | | *FREQUENCY* | *PERCENT* |
|---|---|---|---|
| | ***Male*** | 347 | 47,21 |
| | ***Female*** | 358 | 48,70 |
| | ***Total*** | 705 | 95,91 |
| ***Missing*** | | 30 | 4,00 |
| ***Total*** | | 735 | 100,0 |

The profile of the respondents discloses that 20,80% were aged between 21 to 30, whereas 68,3% were between 31 and 55 (Table 15).

**Table 15 - Age.**

| | | *FREQUENCY* | *PERCENT* |
|---|---|---|---|
| | **<20** | 9 | 1,20 |
| | **21-30** | 144 | 20,80 |
| | **31-55** | 511 | 68,30 |
| | **>55** | 35 | 4,80 |
| | **TOTAL** | 699 | 95,10 |
| **Missing** | | 36 | 4,90 |
| **Total** | | 735 | 100,00 |

Regarding educational level, 52,80% of respondents have a degree and 27,60% a master (Table 16).

**Table 16 - Educational Level.**

| | | *FREQUENCY* | *PERCENT* |
|---|---|---|---|
| | **Primary** | 7 | 1,00 |
| | **Elementary (5th-6th Grade)** | 1 | 0,10 |
| | **Elementary (Til 9th Grade)** | 5 | 0,70 |
| | **Secondary** | 79 | 10,70 |
| | **Degree** | 388 | 52,80 |
| | **Master** | 203 | 27,60 |
| | **PhD** | 17 | 2,30 |
| | **TOTAL** | 700 | 95,20 |
| **Missing** | | 35 | 4,80 |
| **Total** | | 735 | 100,0 |

In terms of income, 61,90% of respondents have a total net income per household (Table 17). From 1001,00€ to 2500,00€ and 42,00% have reported that the total income is satisfactory (Table 18). Regarding household size, 28,00% of respondents have three elements (Table 19).

**Table 17 - Total Income of Household (net).**

| | | *FREQUENCY* | *PERCENT* |
|---|---|---|---|
| | **Till 1000,00 €** | 127 | 17,30 |
| | **1001,00-1500,00 €** | 117 | 15,90 |
| | **1501,00-2000,00 €** | 124 | 16,90 |
| | **2001,00-2500,00 €** | 87 | 11,80 |
| | **2501,00-3000,00 €** | 79 | 10,70 |
| | **3001,00-3500,00€** | 51 | 6,90 |
| | **More Than 3500,00 €** | 115 | 15,60 |
| | **TOTAL** | 700 | 95,10 |
| **Missing** | | 35 | 4,90 |
| **Total** | | 735 | 100,0 |

**Table 18 - Social Income Fit.**

| | | *FREQUENCY* | *PERCENT* |
|---|---|---|---|
| | **The current income allows me to live comfortably.** | 203 | 27,60 |
| | **The current income allows me to live.** | 309 | 42,00 |
| | **It is hard to live with current income.** | 117 | 15,90 |
| | **It is very hard to live with current income.** | 31 | 4,20 |
| | **I can not live with the current income.** | 11 | 1,50 |
| | **TOTAL** | 671 | 91,3 |
| **Missing** | | 64 | 8,70 |
| **Total** | | 735 | 100,0 |

**Table 19 - Household Size (Number of People).**

| | *FREQUENCY* | *PERCENT* |
|---|---|---|
| **1** | 123 | 17,60 |
| **2** | 171 | 24,53 |
| **3** | 196 | 28,12 |
| **≥4** | 207 | 26,70 |
| **Total** | 697 | 96,95 |
| **Missing** | 38 | 3,05 |
| **Total** | 735 | 100,00 |

## 6.5| Exploratory Factor Analysis

In this first exploratory phase, Principal Component Analysis (PCA) was used to obtain preliminary results on the dimensionality of the constructs.

Factor analysis can be used to evaluate whether the number of dimensions conceptualized could be verified empirically (Churchill and Gilbert, 1979).

Thus, PCA was performed to assess the ability of the indicators to measure the constructs theoretically presented. A principal component analysis with varimax rotation was performed with all items.

Thirty seven items were examined through PCA using SPSS 20.0 for Windows. First of all, the adequacy of data for factor analysis was assessed. The first concern was the sample size. Comrey and Lee (1992) defines sample sizes of 100 as poor, 200 as fair, 300 as good, 500 as very good, and 1000 as excellent. Hair et al. (2005) recommended a sample superior to 200 and a minimum of five respondents for each estimated parameter, and considers more appropriated a ratio of ten respondents per parameter. Thus, our data is adequate for factor analysis as it includes 735 cases.

Then, Kaiser–Meyer–Oklin Measure (KMO) of Sampling Adequacy was assessed. The KMO is calculated for individual and multiple variables and represents the ratio of the squared correlation between variables to the squared partial correlation between variables (Field, 2000). The KMO value varies between 0 and 1. A value of 0 indicates that the sum of partial correlations is large relative to the sum of correlations, In turn, a value close to 1 indicates that the patterns of the correlations are compact, and so factor analysis will yield reliable factors. Kaiser (1974) recommendation is that values greater than 0,5 should be accepted. Hutcheson and Sofroniou (1999) suggested that KMO values between 0,5 and 0,7 are normal, values between 0,7 and 0,8 are good, values between 0,8 and 0,9 are great, and values above 0,9 are superb. The result of our factor analysis revealed a KMO value of 0,893, which is very good.

Finally, Bartlett's Test of Sphericity is supposed to reach a significance value to support the factorability of the correlation matrix obtained from the items. Bartlett's Test of Sphericity revealed an approximated Chi-Square value of 18857,288 with a significance value of 0,0005, which means that the factorability of our correlation matrix is suitable.

The KMO's and Bartlett's Test results are depicted on Table 20.

**Table 20 - The KMO and Bartlett's Test.**

***KMO AND BARTLETT'S TEST***

| | | |
|---|---|---|
| **Kaiser-Meyer-Olkin Measure of Sampling Adequacy.** | | 0,893 |
| **Bartlett's Test of Sphericity** | **Approx. Chi-Square** | 18857,288 |
| | ***df*** | 666 |
| | **Sig.** | 0,000 |

The PCA revealed the presence of seven components with eigenvalues greater than one instead of the expected eight components, which explained 69,86% of the total variance. Details regarding the total variance explained are provided in Table 21.

When variables with lower loadings of 0,40 exist, or cross-loadings are substantial, these variables should be removed from analysis because they are either insufficiently representative of the factor to which they are related, or are measuring together more than one factor, which is not pretended to be (Hair, et al.,1995; Churchill and Gilbert, 1979; Field, 2000). Besides, Pallant (2001) claims that if an item loading is above 0,4 (strong loading) it should not be deleted. In our case, all items were maintained.

All the items were aggregated around the factor that were supposed to measure, given the correlations between the observed variables and factors (loadings). The number of factors correspond to what was presented as hypotheses, except for the constructs Performance and Physical Perceived Risks that appear grouped into one dimension. This situation maybe due to the fact that indicators of both constructs are related with product quality. This evidence was incorporated on model.

**Table 21 – Total Variance Explained.**

| *COMPONENT* | *INITIAL EIGENVALUES* | | | *EXTRACTION SUMS OF SQUARED LOADINGS* | | | *ROTATION SUMS OF SQUARED LOADINGS* | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Total* | *% of Variance* | *Cumulative %* | *Total* | *% of Variance* | *Cumulative %* | *Total* | *% of Variance* | *Cumulative %* |
| 1 | 9,276 | 25,071 | 25,071 | 9,276 | 25,071 | 25,071 | 5,159 | 13,942 | 13,942 |
| 2 | 4,571 | 12,355 | 37,426 | 4,571 | 12,355 | 37,426 | 4,705 | 12,717 | 26,659 |
| 3 | 3,320 | 8,973 | 46,399 | 3,320 | 8,973 | 46,399 | 4,360 | 11,783 | 38,442 |
| 4 | 3,057 | 8,263 | 54,662 | 3,057 | 8,263 | 54,662 | 3,568 | 9,643 | 48,085 |
| 5 | 2,512 | 6,790 | 61,452 | 2,512 | 6,790 | 61,452 | 2,865 | 7,744 | 55,829 |
| 6 | 1,843 | 4,981 | 66,433 | 1,843 | 4,981 | 66,433 | 2,740 | 7,405 | 63,234 |
| 7 | 1,268 | 3,427 | 69,860 | 1,268 | 3,427 | 69,860 | 2,452 | 6,626 | 69,860 |

Extraction Method: Principal Component Analysis.

**Table 22 - Varimax Rotated Component Matrix[a].**

***ROTATED COMPONENT MATRIX[a]***

| | *COMPONENT* | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **PER_3: These products are more effective than regular ones.** | **0,862** | 0,083 | -0,090 | -0,161 | -0,043 | -0,081 | 0,009 |
| **PER_1: The environmentally friendly products are of superior quality compared to regular ones.** | **0,854** | 0,065 | -0,051 | -0,153 | -0,113 | -0,039 | -0,063 |
| **PER_2: These products are more efficient than regular ones.** | **-0,852** | -0,079 | 0,068 | 0,165 | 0,040 | 0,101 | -0,009 |
| **PER_4: Overall, regarding the quality of these products are better.** | **0,849** | 0,092 | -0,042 | -0,165 | -0,074 | -0,065 | -0,080 |
| **PHY_3: These products are better for my health than regular ones.** | **0,818** | 0,080 | -0,024 | -0,087 | -0,160 | -0,056 | -0,160 |

**Table 22 - Varimax Rotated Component Matrix[a].**

***ROTATED COMPONENT MATRIX[a]***

| | ***COMPONENT*** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **PHY_1: These products are good for my health.** | **0,753** | 0,108 | -0,015 | -0,045 | -0,183 | -0,034 | -0,167 |
| **PHY_2: There are fewer side effects to my health when I use / consume these products.** | **-0,716** | -0,084 | 0,032 | 0,070 | 0,172 | 0,018 | 0,203 |
| **PSI_7: To opt for these products contributes to an improvement of the image that others have of me.** | 0,045 | **0,852** | -0,133 | -0,109 | -0,014 | -0,065 | 0,025 |
| **PSI_6: I believe that when buying these products have a positive impact on my image in society.** | -0,044 | **-0,835** | 0,126 | 0,063 | 0,046 | 0,011 | 0,082 |
| **PSI_3: These products improve the image I have about myself.** | 0,126 | **0,813** | -0,110 | -0,053 | -0,092 | -0,056 | 0,069 |
| **PSI_4: To choose these products gives me a greater sense of acceptance by others.** | 0,039 | **0,796** | -0,138 | -0,009 | 0,002 | -0,062 | 0,032 |
| **PSI_1: To buy these products increases my self-esteem.** | 0,131 | **0,784** | -0,102 | -0,171 | -0,160 | -0,133 | 0,048 |
| **PSI_5: Other people react positively when they know that buy these products.** | 0,040 | **0,746** | -0,090 | -0,057 | -0,026 | -0,055 | -0,055 |
| **PSI_2: To opt for these products brings me personal satisfaction.** | 0,204 | **0,710** | -0,041 | -0,222 | -0,223 | -0,120 | 0,038 |
| **COL_3: The welfare of the group is more important than individual reward.** | -0,057 | -0,053 | **0,885** | 0,051 | 0,087 | 0,018 | -0,010 |

**Table 22 - Varimax Rotated Component Matrix[a].**

***ROTATED COMPONENT MATRIX[a]***

| | ***COMPONENT*** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **COL_4: The group's success is more important than individual success.** | -0,035 | -0,081 | **0,877** | -0,014 | 0,092 | 0,024 | -0,034 |
| **COL_6: The feeling of loyalty to the group should be encouraged even if individual objectives are affected.** | -0,038 | -0,133 | **0,845** | 0,004 | -0,001 | 0,005 | -0,064 |
| **COL_1: People should sacrifice their personal interests for the interests of their group.** | -0,059 | -0,123 | **0,811** | 0,082 | 0,104 | 0,040 | 0,002 |
| **COL_2: People must prefer the interests of the group even if it means going through difficulties.** | -0,039 | -0,139 | **0,808** | 0,070 | 0,040 | 0,045 | 0,007 |
| **COL_5: People should only seek to achieve their personal goals after considering the welfare of the group.** | -0,049 | -0,151 | **0,797** | 0,018 | -0,025 | 0,019 | 0,006 |
| **GPB_1: I buy "environmentally friendly" products whenever possible..** | -0,211 | -0,165 | 0,037 | **0,822** | 0,206 | 0,108 | -0,027 |
| **GPB_4: I have the concern to reduce waste at home whenever possible.** | -0,061 | -0,095 | 0,032 | **0,808** | 0,235 | 0,046 | 0,046 |
| **GPB_3: I use products made from recycled materials whenever possible.** | -0,182 | -0,149 | 0,056 | **0,753** | 0,256 | 0,050 | 0,018 |
| **GPB_5: I try to recycle waste at home whenever possible.** | -0,117 | -0,038 | 0,027 | **0,732** | 0,273 | 0,036 | 0,036 |
| **GPB_2: I buy biological products whenever possible.** | -0,278 | -0,178 | 0,066 | **0,707** | 0,151 | 0,117 | -0,106 |

**Table 22 - Varimax Rotated Component Matrix[a].**

***ROTATED COMPONENT MATRIX[a]***

| | ***COMPONENT*** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **ECA_2: I would be willing to reduce my consumption patterns to protect the environment.** | -0,180 | -0,057 | 0,075 | 0,176 | **0,789** | 0,078 | -0,028 |
| **ECA_5: I intend to change my consumption patterns to protect the environment.** | -0,197 | -0,128 | 0,071 | 0,294 | **0,736** | 0,030 | 0,057 |
| **ECA_1: I am concerned about the environment.** | -0,129 | -0,082 | 0,081 | 0,281 | **0,677** | 0,040 | 0,091 |
| **ECA_4: I have asked my family to recycle some of the products we use.** | -0,111 | -0,078 | 0,056 | 0,379 | **0,606** | 0,031 | 0,102 |
| **ECA_3: I would be able to donate some money to contribute to the protection of wildlife.** | -0,097 | -0,096 | 0,029 | 0,117 | **0,601** | 0,083 | -0,152 |
| **CON_2: I usually have to look for these products in several stores to find it.** | -0,100 | -0,079 | 0,067 | 0,139 | 0,036 | **0,869** | -0,009 |
| **CON_1: These products are often difficult to find for sale.** | -0,105 | -0,061 | 0,067 | 0,134 | 0,042 | **0,824** | 0,065 |
| **CON_3: These products are hard to find inside the store.** | -0,061 | -0,096 | 0,009 | -0,047 | 0,023 | **0,823** | 0,073 |
| **CON_4: I spend some time in the store before buying them, as first I want to read the information and compare them.** | -0,035 | -0,149 | -0,007 | 0,061 | 0,141 | **0,683** | 0,185 |
| **FIN_1: These products are expensive compared to products that are not environmentally friendly.** | -0,196 | -0,003 | -0,031 | -0,026 | 0,030 | 0,072 | **0,878** |

**Table 22 - Varimax Rotated Component Matrix[a].**

***ROTATED COMPONENT MATRIX[a]***

| | ***COMPONENT*** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **FIN_2: Usually there is a need to pay more for these products.** | -0,192 | 0,010 | -0,023 | 0,054 | 0,020 | 0,078 | **0,875** |
| **FIN_3: These products have a high price even taking into account its value.** | -0,119 | 0,046 | -0,033 | -0,021 | -0,052 | 0,156 | **0,824** |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

## 6.6| Confirmatory Factor Analysis

The confirmatory factor analysis comprises a set of steps: model specification, model identification, model estimation, model assessment and model reespecification (Kline, 1998; Bagozzi and Baumgartner, 1994; Bollen, 1989; Anderson and Gerbing, 1988).

### 6.6.1| Model Specification

The confirmatory factor analysis is a technique based on the analysis of structured covariances, that aims to determine if a proposed specified measurement model based on a set of hypotheses previously established is consistent or not with reality.

As mentioned before, the first step is the model specification. As can be observed in Figure 32 and on Table 23, the model is specified with six latent variables and a total of 31 indicators. Individualism/Collectivism was not treated as a latent variable at this point since it was used only for multigroup analysis as a moderator variable.

**Table 23 - Latent Variables and Indicators.**

| *LATENT VARIABLE* | *INDICATORS* |
|---|---|
| **Environmental Attitudes** | 5 |
| **Green Purchase Behaviour** | 5 |
| **Financial Perceived Risks** | 3 |
| **Performance/Physical Perceived Risks** | 7 |
| **Temporal Perceived Risks** | 4 |
| **PsycoSocial Perceived Risks** | 7 |
| **Total** | 31 |

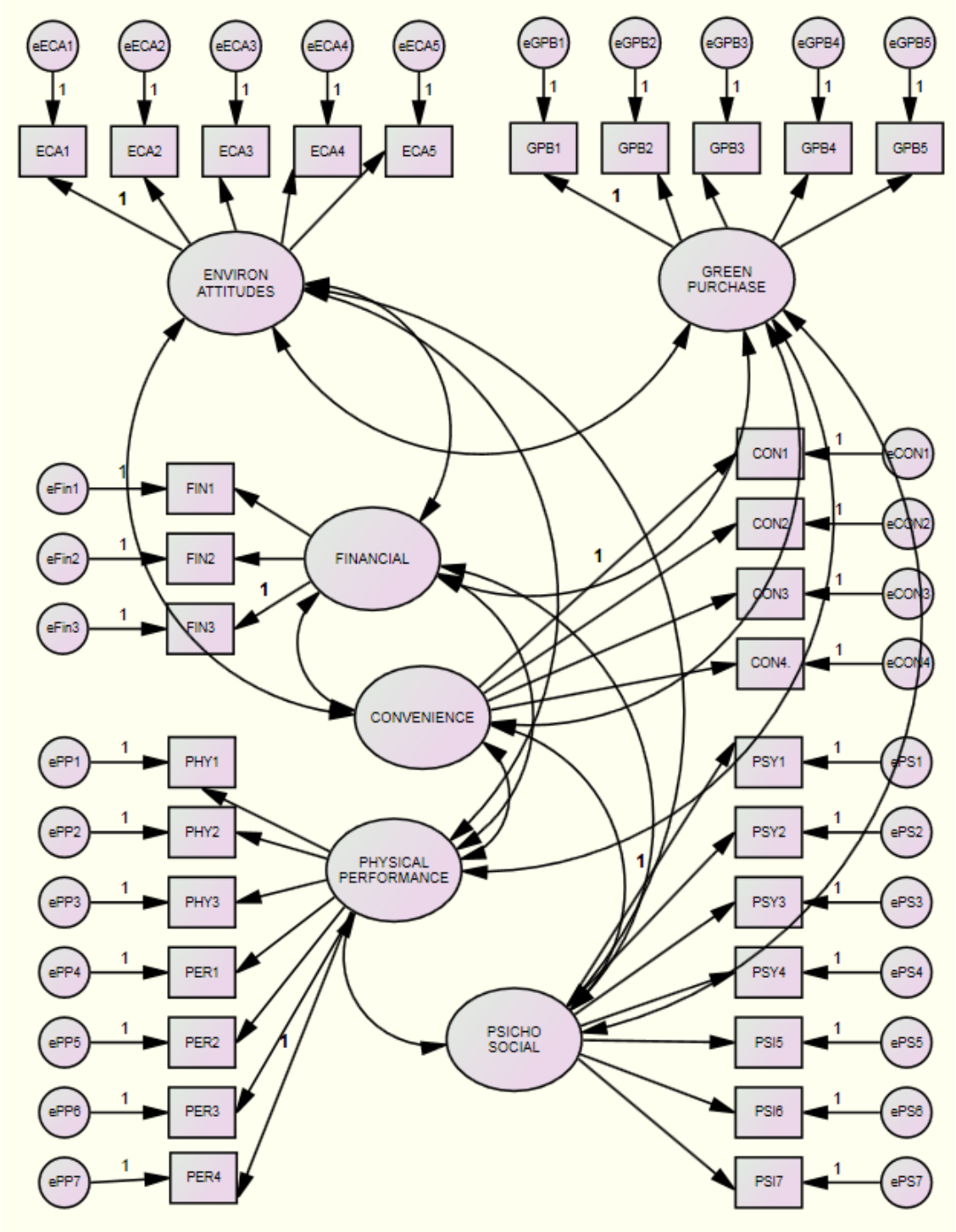


**Figure 32 - Model Specification.**

### 6.6.2| Model Identification, Evaluation and Estimation

Regarding model identification, the model presented in Figure 32 has 419 degrees of freedom (*df*) and it is an over-identified model (*df* >0).

The first step to proceed to model evaluation is to review the model and assure that it does not violate the estimation assumptions. According to Hair et al. (2005), these violations include negative error variances or non significant error variances related to each construct (heywood cases), standardized coefiecients greater than one and very high standard errors associated with the estimated coeficients. In our model no violations on the estimation assumptions were found which means that model fit could be assessed.

The model was then estimated with maximum likelihood estimation method. We have assessed the overall fit of the model to ensure that it was an adequate representation of the entire set of causal relationships.

Three types of goodness-of-fit measurements were examined: absolute fit measures, incremental fit measures, and parsimonious fit measures. The results of the goodness-of-fit measurements for SEM are displayed in Table 24.

The model fit indexes, as showed in Table 24, were $\chi 2$ =2350,24, *df*=419, $p$ < 0,001, GFI=0,81, AGFI=0,77, RMSEA=0,079, NFI=0,850, CFI=0,873, TLI=0,859. More detailed data can be found on Appendix 4.

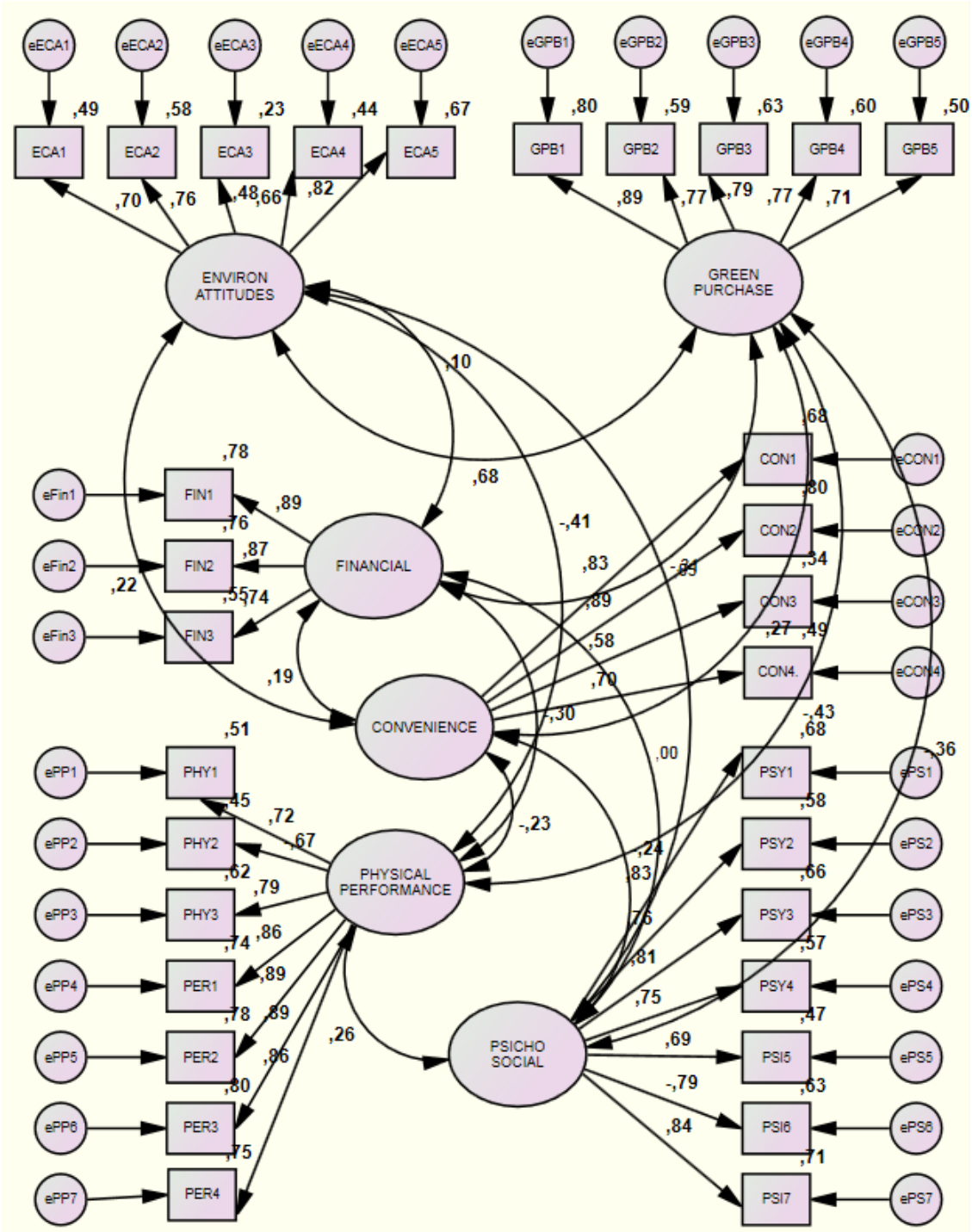


**Figure 33 –Model Estimation (First Model).**

**Table 24– Model Fit indexes / Recommended Level vs Research Model Source: Adapted from Marôcco, J. (2014).**

| MEASURES | RECOMMENDED LEVEL | RESEARCH MODEL | RESULTS ANALYSIS |
|---|---|---|---|
| **Chi-squared - $\chi 2$ and *p*-value** | The lowest, the better; *p* > 0,05 | 2350,240 | High $\chi 2$, significant |
| **$\chi 2$/ *df* (Sig)** | <5 – Bad Fit<br>]2;5] – Tolerable Fit<br>]1;2] – Good Fit<br>~1 – Very Good Fit | 2350,240/419 (*p*>0,001) = 5,4 | Bad Fit |
| **Goodness of fit index (GFI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,808 | Tolerable Fit |
| **Root mean square error of approximation (RMSEA)** | 0,05-0,08 | 0,079 | Acceptable |
| **INCREMENTAL FIT MEASURES:** | | | |
| **Adjusted goodness of fit index (AGFI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,773 | Bad Fit |
| **Normed fit index (NFI)** | >0.8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,850 | Tolerable Fit |
| **Incremental fit index (IFI)** | >0.8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,873 | Tolerable Fit |
| **PARSIMONIOUS FIT MEASURES:** | | | |
| **Comparative fit index (CFI)** | >0.8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,873 | Tolerable Fit |
| **Tucker-Lewis Index (TLI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,859 | Tolerable Fit |

A model is regarded as acceptable if:

- The NFI exceeds 0,90 (Byrne, 1994) or 0,95 (Schumacker and Lomax, 2004);
- The GFI exceeds 0,90 (Byrne, 1994);
- The CFI exceeds 0,93 (Byrne, 1994);
- RMSEA is less than 0,08 (Browne and Cudeck, 1993) and ideally less than 0,05 (Stieger, 1990). Alternatively, the upper confidence interval of the RMSEA should not exceed 0,08 (Hu and Bentler, 1998)
- The relative chi-square should be less than 2 or 3 (Kline, 1998; Ullman, 2001).

This evaluation indicated that the original model needed to be reespecified to have a better fit for the data.

### 6.6.3| Reespecified Model Fit

Model reespecification occurs when a proposed model is tested and there is a need to improve model fit, often through adding or removing paths among constructs (Shook et al., 2014). If the model does not have a very good fit, it is necessary to analyze carefully the various components of the model, focusing on the number of constructs, in its relations with the indicators, and the associations between the measurement errors, to identify the source of the problem and to be able to suggest appropriate modifications.

The initial estimates based on all thirty seven items showed that item ECA3 and CON3 had poor square multiple correlations (0,231 for item ECA3, and 0,342 for item CON3), as well as low regression weights (0,480 for item ECA3, and 0,585 for CON3). ECA3 evaluated the ability of the respondents to donate money to contribute the protection of wildlife and this item content was substantially different from the remain items that were part of this scale that refer to specific environment attitudes. This fact could help to explain the results. CON3 (“These products are hard to find inside the store”) in PCA had also lower results when compared with the average of the component it belonged.

Modification indices showed that item PSY2 and PER2 had large error covariance (50,53). Further assessment of regression weights of both items showed that both present negative values, with item PHY2 with -0,670 and PER2 with -0,885. As per aforementioned PCA results, PER2 (“These products are more efficient than regular

ones") and PHY2 ("There are fewer side effects to my health when I use / consume these products") were the only two items from physical and performance perceived risks that presented negative values and this might reveled some difficulties that respondents might had to evaluate these items and could be an explanation for these results.

Modification indices also showed that item PSY5 and PSY6 had large error covariance (108,69). Further assessment of regression weights of both items showed that PSY6 present negative values with -0,793 and PSY5 with 0,686 being the one after PSY6 that had less effect in the construct. The same fact as PER2 and PHY2 was verified regarding PSI6 ("I believe that when buying these products have a positive impact on my image in society") but regarding psychosocial perceived risks. PSI5 ("Other people react positively when they know that buy these products") in PCA had also lower results when compared with the average of the component it belonged. Based on this, items ECA3, CON3, PHY2, PER2, PSY5 and PSY6 were removed.

The reespecified model fit indices, as showed in Table 25, indicated that the hypothesized model was a good representation of the structures underlying the observed data ($\chi 2$ =915, $p$ < 0,001, $df$=260, GFI=0,902, AGFI=0,878, RMSEA=0,059, NFI=0,921, CFI=0,942, TLI=0,933). As can be observed on Table 25, the factor loadings are all positive, high and significant at the 0,05 level. More detailed data can be found on Appendix 5.

Moreover, CMIN/DF values were 3,520 that less than 5 meaning that it was adequately reasonable for a model (Ghozali, 2008; Byrne, 2001).

Thus, we conclude that the model had been validated successfully and could be seen as appropriate for the explanation and prediction of environmental attitudes on green purchase behaviour.

Figure 34 describes the final confirmatory factor a model of the study.

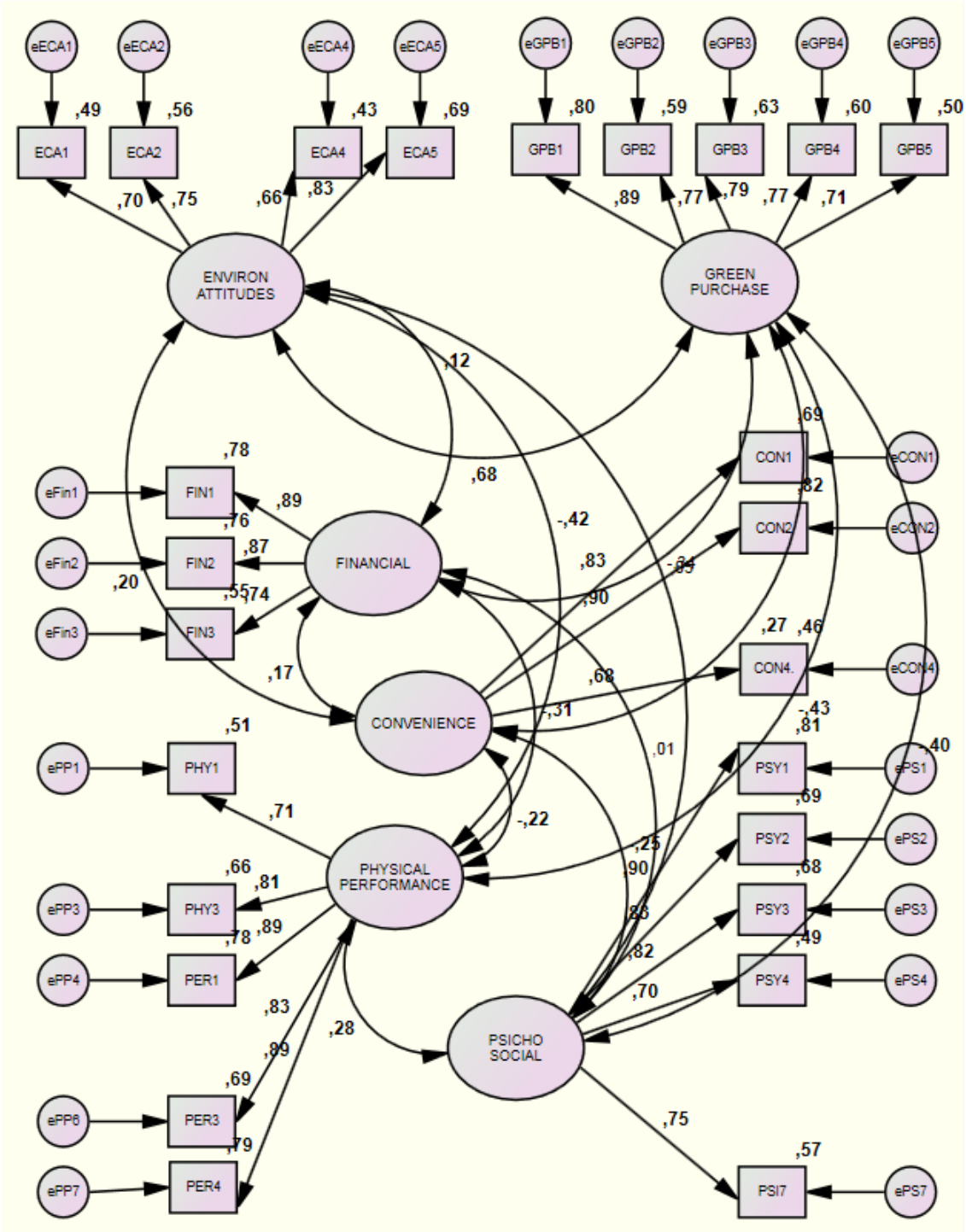


**Figure 34 - Confirmatory Reespecified Model.**

On Table 25, the comparison between the model fit of the first model and the reespecified model is illustrated.

**Table 25 – Model Fit Indexes / Recommended Level Vs First Model Vs Reespecified Model. Source: Adapted from Marôcco, J. (2014).**

| *MEASURES* | *RECOMMENDED LEVEL* | *FIRST MODEL* | *REESPECIFIED MODEL* | *RESULTS ANALYSIS* |
|---|---|---|---|---|
| **Chi-squared - χ2 and *p*-value** | The lowest, the better; $p > 0,05$ | 2350,240 | 915,33 | Lower than first model |
| **χ2/*df* (Sig)** | <5 – Bad Fit<br>]2;5] – Tolerable Fit<br>]1;2] – Good Fit<br>~1 – Very Good Fit | 2350,240/419 ($p$>0,001) = 5,4 | 915,33/260 (p<0,001)=3,5 | Tolerable Fit |
| **Goodness Of Fit Index (GFI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,808 | 0,902 | Good Fit |
| **Root Mean Square Error of Approximation (RMSEA)** | 0,05-0,08 | 0,079 | 0,59 | Adequate |
| ***INCREMENTAL FIT MEASURES:*** | ***RECOMMENDED LEVEL*** | ***FIRST MODEL*** | ***REESPECIFIED MODEL*** | ***RESULTS ANALYSIS*** |
| **Adjusted Goodness Of Fit Index (AGFI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,773 | 0,878 | Tolerable Fit |
| **Normed Fit Index (NFI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,850 | 0,921 | Good Fit |
| **Incremental fit index (IFI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,873 | 0,942 | Good Fit |

**Table *25* – Model Fit Indexes / Recommended Level Vs First Model Vs Reespecified Model. Source: Adapted from Marôcco, J. (2014).**

| PARSIMONIOUS MEASURES: FIT | *RECOMMENDED LEVEL* | *FIRST MODEL* | *REESPECIFIED MODEL* | *RESULTS ANALYSIS* |
|---|---|---|---|---|
| **Comparative Fit Index (CFI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,873 | 0,942 | Good Fit |
| **Tucker-Lewis Index (TLI)** | >0,8 – Bad Fit<br>[0,8; 0,9[ - Tolerable Fit<br>[0,9;0,95[ - Good Fit<br>≥0,95 – Very good Fit | 0,859 | 0,933 | Good Fit |

**Table 26 - Standardized Regression Weights (factor loadings) for Reespecified Confirmatory Model.**

| | | **ESTIMATE** |
|---|---|---|
| **ECA1** | **<--- Environmental Attitudes** | 0,701 |
| **ECA2** | **<--- Environmental Attitudes** | 0,750 |
| **GPB2** | **<--- Green Purchase Behaviour** | 0,768 |
| **GPB3** | **<--- Green Purchase Behaviour** | 0,791 |
| **GPB4** | **<--- Green Purchase Behaviour** | 0,774 |
| **PER4** | **<--- Physical and Performance Perceived Risks** | 0,888 |
| **PER3** | **<--- Physical and Performance Perceived Risks** | 0,831 |
| **PER1** | **<--- Physical and Performance Perceived Risks** | 0,886 |
| **PHY3** | **<--- Physical and Performance Perceived Risks** | 0,810 |
| **PHY1** | **<--- Physical and Performance Perceived Risks** | 0,715 |
| **PSY1** | **<--- Psychosocial Perceived Risks** | 0,899 |
| **PSY2** | **<--- Psychosocial Perceived Risks** | 0,831 |
| **PSY3** | **<--- Psychosocial Perceived Risks** | 0,824 |
| **PSY4** | **<--- Psychosocial Perceived Risks** | 0,700 |

**Table 26 - Standardized Regression Weights (factor loadings) for Reespecified Confirmatory Model.**

| | | | ESTIMATE |
|---|---|---|---|
| **PSI7** | **<---** | **Psychosocial Perceived Risks** | 0,752 |
| **FIN3** | **<---** | **Financial Perceived Risks** | 0,742 |
| **FIN2** | **<---** | **Financial Perceived Risks** | 0,871 |
| **FIN1** | **<---** | **Financial Perceived Risks** | 0,886 |
| **CON1** | **<---** | **Convenience Perceived Risks** | 0,834 |
| **CON2** | **<---** | **Convenience Perceived Risks** | 0,903 |
| **CON4** | **<---** | **Convenience Perceived Risks** | 0,679 |
| **ECA4** | **<---** | **Environmental Attitudes** | 0,659 |
| **ECA5** | **<---** | **Environmental Attitudes** | 0,831 |
| **GPB5** | **<---** | **Green Purchase Behaviour** | 0,705 |
| **GPB1** | **<---** | **Green Purchase Behaviour** | 0,892 |

The means, standard deviations, and correlation matrix are shown in Table 27. All variables correlate significantly.

**Table 27 - Means, standard deviations and correlation matrix.**

| | MEAN | STD. DEVIATION | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| **1. Convenience Perceived Risks** | 4,86 | 1,16 | **1** | | | | | |
| **2. Financial Perceived Risks** | 5,52 | 1,17 | 0,166 | **1** | | | | |
| **3. Psychosocial Perceived Risks** | 4,01 | 1,59 | 0,251 | -0,009 | **1** | | | |
| **4. Physical/Performance Perceived Risks** | 2,62 | 1,26 | 0,218 | 0,314 | 0,284 | **1** | | |
| **5. Green Purchase Behaviour** | 5,38 | 1,26 | -0,266 | -0,051 | -0,401 | -0,426 | **1** | |
| **6. Environmental Attitudes** | 5,89 | 0,87 | -0,204 | -0,117 | -0,345 | -0,422 | 0,676 | **1** |

N= 735 ***$p$<0.001

The reespecified model is assumed as the proposed confirmatory model.

#### 6.6.3.1| Internal Consistency and Reliability

Cronbach's alpha coefficient of equivalence, which is usually simply called by Cronbach Alpha coefficient or α coefficient, is widely used in scale reliability study (Gerbing and Anderson, 1988). It indicates the proportion of the variance of the scale that is assigned to the true value of the underlying latent variable of the items (DeVellis, 1991). Cronbach's alpha coefficient is the basic statistic for determining the reliability of a measure based on internal consistency (Churchill and Gilbert, 1979).

As can be depicted on Table 28, Cronbach's alpha ranges from 0,807 to 0,917. DeVellis (1991) states that, Cronbach's alpha coefficient values below 0,60 are unacceptable, between 0,65 and 0,70 are minimally acceptable, between 0,70 and 0,80 are good, and between 0,80 and 0,90 are very good. In this case, Cronbach's alpha are very good.

As referred by Baumgartner and Homburg (1996), the composite reliability (C.R.) and average variance extracted (AVE) should be reported as preferred measures of reliability. The coefficient of Cronbach alpha is an inferior measure because it is only the lower reliability limit. And this occurs because Cronbach's alpha assumes that items are measured without error, which is not plausible. Thus, when assessing for the reliability of the items that contain error, as often happens in practice it will be more appropriate to use the measure of CR and AVE. For this reason, although we report Cronbach's alpha, the CR and the AVE (Fornell and Larcker, 1981) are preferential measures for reliability, obtained from the model of confirmatory factor analysis as it is recommended.

The C.R. estimates ranged from 0,82 to 0,89 as reported in Table 28, and exceeded the recommended values, as above 0,6 are indicated as desirable by some authors (Bagozzi and Yi 1988; Fornell and Larcker 1981) and above 0,70 indicated by Hair et al. (1998).

The AVE estimates was also adequate. Values above 0,5 were desirable (Fornell and Larcker, 1981; Hair et al., 1998) and as can be seen on Table 28, AVE ranges from 0,55 to 0,70.

To sum up, all the measures showed adequate and good reliability as they exceeded the recommended thresholds.

**Table 28 – C.R., A.V.E. and Cronbach's Alpha**

| *CONSTRUCT* | *C.R.* | *A.V.E.* | *CRONBACH'S ALPHA* |
|---|---|---|---|
| **Environmental Attitudes** | 0,83 | 0,55 | 0,807 |
| **Green Purchase Behaviour** | 0,89 | 0,62 | 0,885 |
| **Physical/Performance Perceived Risks** | 0,84 | 0,69 | 0,915 |
| **Psychosocial Perceived Risks** | 0,82 | 0,65 | 0,900 |
| **Financial Perceived Risks** | 0,85 | 0,70 | 0,861 |
| **Temporal Perceived Risks** | 0,85 | 0,65 | 0,841 |

#### 6.5.3.2| Validity: convergent and discriminant

For an overall evaluation of the measurement model, there is need to evaluate the convergent and discriminant validity.

Convergent validity can be defined as the extent to which the scores on one measure are related to scores collected from a similar or different measure (Levy and Varela, 2006). These scores can be positively or negatively correlated with the scores collected from the similar or different measure. The convergent validity was assessed by the factor loadings and composite reliability. The standardized loadings of all factors exceeded 0,659 and are significant ($p < 0,001$), as can be seen on Table 29. The composite reliabilities for all factors were also above 0,80, indicating good convergent validity (Levy and Varela, 2006).

Discriminant validity is the extent to which measures of theoretically different constructs should not correlate highly to each other. There are a number of ways to assess discriminant validity between constructs. (Farrell, 2010).

According to Levy and Varela (2006) it is usually considered that discriminant validity exists when correlations between factors are inferior to 0,50, resulting in the evidence of different constructs. Almost all correlations between factors are less than 0,50, which showed discriminant validity of latent variables (Table 29).

Fornell and Larcker (1981) stated that for an adequate discriminant validity, the square root of the AVE should exceed the inter-correlations of the construct with the other constructs in the model.

**Table 29 – Correlation Matrix – Discriminant Validity.**

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1. Convenience Perceived Risks** | **0,42** | | | | | |
| **2. Financial Perceived Risks** | 0,166 | **0,49** | | | | |
| **3. Psychosocial Perceived Risks** | 0,251 | -0,009 | **0,42** | | | |
| **4. Physical/Performance Perceived Risks** | 0,218 | 0,314 | 0,284 | **0,48** | | |
| **5. Green Purchase Behaviour** | -0,266 | -0,051 | -0,401 | -0,426 | **0,78** | |
| **6. Environmental Attitudes** | -0,204 | -0,117 | -0,345 | -0,422 | 0,676 | **0,74** |

Legend: Diagonal elements in bold are the square root of AVE.

Overall, as can also be depicted on Table 29, all the square root of the AVE exceeded the inter-correlations of the construct with the other constructs in the model. The results achieved showed a good level of convergent and discriminant validity.

### 6.6.4| Assessment of the Hypothesized Relationships

After the assessment of the measurement model, the next step was to test the hypothesized relationships (i.e., main effects) between the constructs.

The following hypotheses were ascertained:

- H1. There is a positive relation between Environmental Attitudes and Green Purchase Behaviour.
- H2. Global Perceived Risks perception mediates the relation between environmental attitudes towards Green Purchase Behaviour.

SEM was therefore performed for ascertain H1. Global fit [$\chi 2$ (26) = 202,550 ($p < 0,000$); GFI = 0,94; CFI = 0,95; NFI = 0,95; IFI = 0,95; TLI = 0,93; RMSEA = 0,08] showed that the model adequately fit the data. The factor loadings are all positive, high and significant at the 0,05 level. All details can be found on Appendix 6.

The direct relation effect (Figure 35) was tested, as can be observed on Figure 36 and Table 30. Environmental Attitudes has a positive relation on Green Purchase Behaviour, as had been predicted ($\beta$ = 0,678; $p$ < 0,001) and thus H1 is confirmed.

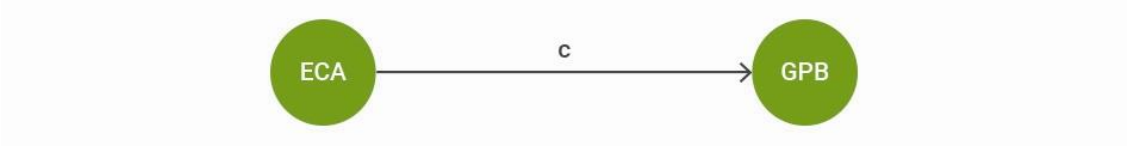


**Figure 35 - Diagram of Direct Relation (without mediator). Source: Adapted from Frazier et al. (2004).**

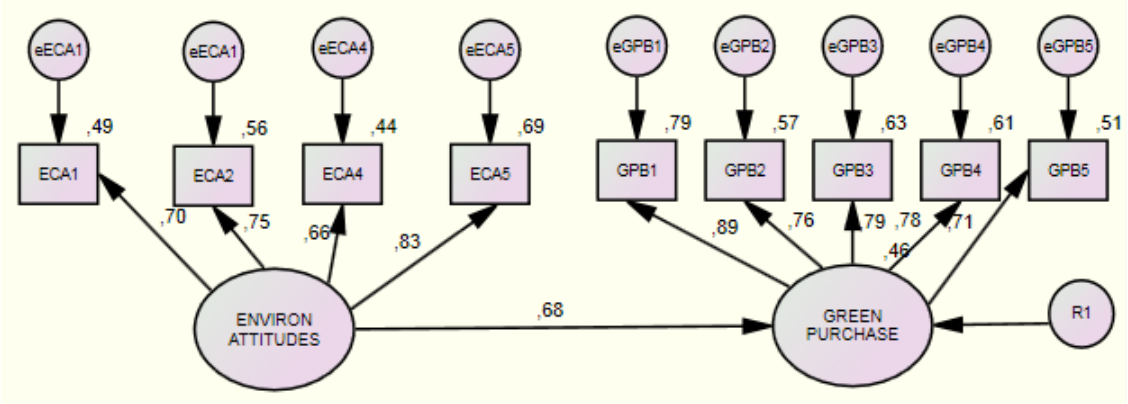


**Figure 36 - H1 Confirmatory Factor Model (SEM)**

**Table 30 – H1 Regression Estimate Weights**

| | | | *ESTIMATE* | *S.E.* | *C.R.* | *P* |
|---|---|---|---|---|---|---|
| **Green Purchase Behaviour** | **<---** | **Environmental Attitudes** | 1,365 | 0,090 | 15,128 | *** |
| **ECA1** | **<---** | **Environmental Attitudes** | 1,000 | | | |
| **ECA4** | **<---** | **Environmental Attitudes** | 1,412 | 0,088 | 15,971 | *** |
| **GPB3** | **<---** | **Green Purchase Behaviour** | 0,876 | 0,033 | 26,544 | *** |
| **ECA5** | **<---** | **Environmental Attitudes** | 1,426 | 0,074 | 19,185 | *** |

**Table 30 – H1 Regression Estimate Weights**

| | | | *ESTIMATE* | *S.E.* | *C.R.* | *P* |
|---|---|---|---|---|---|---|
| **ECA2** | **<---** | **Environmental Attitudes** | 1,131 | 0,063 | 17,895 | *** |
| **GPB1** | **<---** | **Green Purchase Behaviour** | 1,000 | | | |
| **GPB2** | **<---** | **Green Purchase Behaviour** | 0,958 | 0,039 | 24,771 | *** |
| **GPB4** | **<---** | **Green Purchase Behaviour** | 0,866 | 0,033 | 26,051 | *** |
| **GPB5** | **<---** | **Green Purchase Behaviour** | 0,942 | 0,042 | 22,565 | *** |

***$p$=0,001

**Table 31 – H1 Standardized Regression Weights**

| | | | *ESTIMATE* |
|---|---|---|---|
| **Green Purchase Behaviour** | **<---** | **Environmental Attitudes** | 0,678 |
| **ECA1** | **<---** | **Environmental Attitudes** | 0,702 |
| **ECA4** | **<---** | **Environmental Attitudes** | 0,660 |
| **GPB3** | **<---** | **Green Purchase Behaviour** | 0,791 |
| **ECA5** | **<---** | **Environmental Attitudes** | 0,828 |
| **ECA2** | **<---** | **Environmental Attitudes** | 0,751 |
| **GPB1** | **<---** | **Green Purchase Behaviour** | 0,888 |
| **GPB2** | **<---** | **Green Purchase Behaviour** | 0,758 |
| **GPB4** | **<---** | **Green Purchase Behaviour** | 0,782 |
| **GPB5** | **<---** | **Green Purchase Behaviour** | 0,713 |

H2 refers to a mediated relation. A mediator is defined as a variable that explains the relation between a predictor and an outcome (Baron and Kenny, 1986). In other words, a mediator is the mechanism through which a predictor influences an outcome variable (Baron and Kenny, 1986).

For testing the H2, SEM was therefore performed to assess the direct relation that in our case is the path Environmental Attitudes (independent variable) and Green Purchase Behaviour (dependent variable), as well as the indirect effect through Global Risks Perception (a x b), as figure 37 illustrates.

We hypothesized H2 that environmental attitudes had a direct relationship with green purchase behaviour, and that this relation is mediated by global risks perception. This relation can be observed in Figure 37.

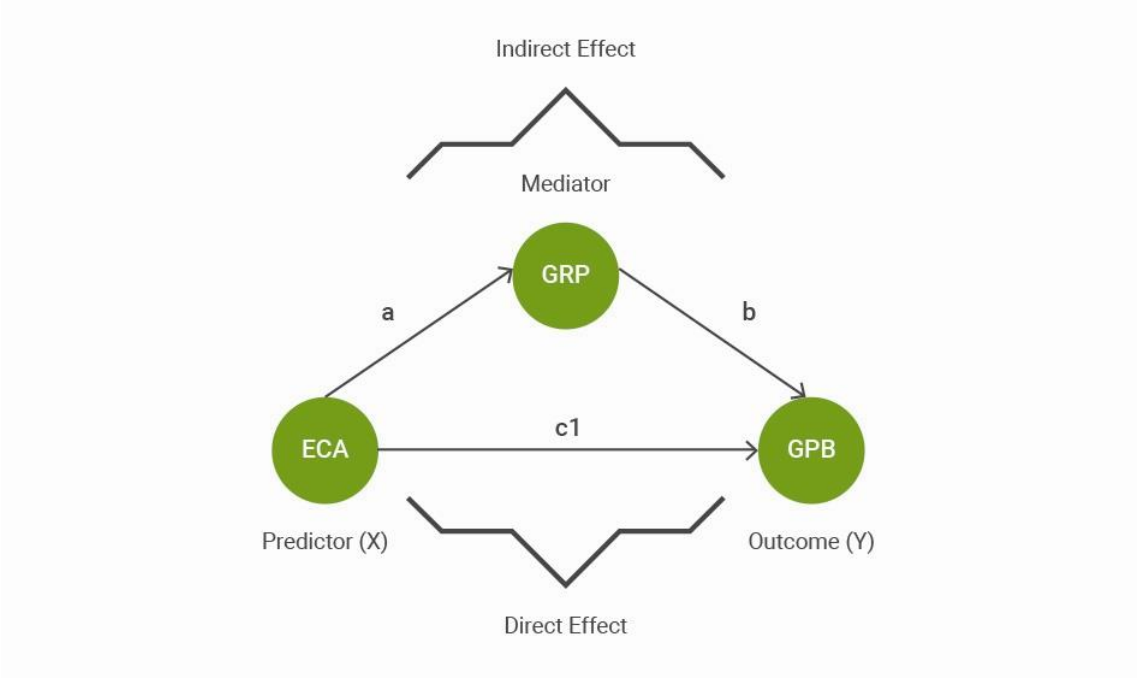


***Figure 37*** **- H2 – Environmental Attitudes – Green Purchase Behaviour relation through Global Risks Perception (direct and indirect relations with mediator).**

As mentioned earlier, global perceived risk was proposed as a second-order reflective construct which is based on previous studies (Featherman and Pavlou, 2003).

According to the "causal steps approach" (Baron and Kenny, 1981), the potential mediation effect of global perceived risks on the relation between environmental attitudes and green purchase behaviour was ascertained. The direct and indirect effects are tested for significance using Bootstrap estimation procedure (Bootstrap sample of 2000). Bootstrap procedures and confidence intervals were not commonly used at the time that Baron and Kenny (1986) formulated their guidelines for assessing mediation. Until recently, to test the significance of indirect effects Sobel's (1982)

large-sample test was mostly used. Nowadays, the developments in statistical theory provide alternative methods for testing direct and indirect effects in mediation models. One useful approach is the bootstrap framework that we are going to use. Some authors (Bollen and Stine, 1990; Shrout and Bolger, 2002) showed that bootstrap methodology could be very useful in studying the sampling variability of estimates of indirect effects in mediation models.

A full SEM was therefore performed to ascertain H2. Global fit [$\chi 2$ (268) = 984,613 ($p$ < 0,000); GFI = 0,88; CFI = 0,94; NFI = 0,92; IFI = 0,94; TLI = 0,93; RMSEA = 0,06] showed that the model adequately fit the data. All the factor loadings are positive, high and significant at the 0, 05 level. All details can be found on Appendix 7.

Then, direct and indirect effects were tested in two parts using the Bootstrap estimation procedure:

a) A basic model postulating a direct relationship between the predictor (environmental attitudes) and the outcome (green purchase behaviour) in the absence of mediators.
   Before the mediator Global Risks Perception was entered in the model, the standardized regression weights are as illustrated on Figure 36. As shown on Table 31, the direct path between environmental attitudes and green purchase behaviour was positive and statistically significant ($\beta$ = 0,678, $p$ <0,001). This result was aligned with Baron and Kenny's first step of mediation.

b) A mediation model that posits the relationship between environmental attitudes and green purchase behaviour mediated by global risks perception.
   When the mediator was added to the model in order to evaluate the indirect effects (a*b: $\beta$ = 0,276, $p$ <0,001) between environmental attitudes and green purchase behaviour, the magnitude of the association was reduced but remained positive and significant ($\beta$ = 0,402, $p$ <0,001). These can be observed on Tables 33 and Table 34.

In short, environmental attitudes had a significant direct effect on green purchase behaviour and there was also significant indirect effect mediated through the global perceived risks.

In this case, there existed a partial mediation. A partially mediated relationship occurs on a situation where a predictor has a specific and direct effect on the outcome in addition to its indirect effect through a mediator (Baron and Kenny, 1981). In this case, global risks perception accounts for a significant amount of variance in the outcome green purchase behaviour, but the relation of the predictor environmental attitudes and the outcome green purchase behaviour remains significant.

It is important to note that full mediation (when path c is reduced to zero) is rare in psychological and social sciences research, as most processes have multiple mediating factors. Therefore it is more realistic to look for mediators that significantly decrease path c, that is, partial mediation (Baron and Kenny, 1981). This will reveal that indeed the mediator is powerful (Baron and Kenney, 1986; Preacher and Hayes, 2004).Therefore, H2 is confirmed: global risks perception mediates, although partially, the relation between environmental attitudes and green purchase behaviour.

**Table 32 - H2 Regression Weights**

| | | | *ESTIMATE* | *S.E.* | *C.R.* | *P* |
|---|---|---|---|---|---|---|
| **Global Risks Perception** | **<---** | **Environmental Attitudes** | 0,259 | 0,058 | 4,500 | *** |
| **Green Purchase Behaviour** | **<---** | **Environmental Attitudes** | 0,815 | 0,129 | 6,321 | *** |
| **Green Purchase Behaviour** | **<---** | **Global Risks Perception** | 2,138 | 0,569 | 3,757 | *** |
| **Physical/Performance Perceived Risks** | **<---** | **Global Risks Perception** | -2,788 | 0,612 | -4,555 | *** |
| **Financial Perceived Risks** | **<---** | **Global Risks Perception** | 1,000 | | | |
| **PsicoSocial Perceived Risks** | **<---** | **Global Risks Perception** | -2,073 | 0,469 | -4,417 | *** |
| **Convenience Perceived Risks** | **<---** | **Global Risks Perception** | 1,511 | ,367 | 4,119 | *** |

*** $p$ =0,000

***Table 33* – H2 Standardized Regression Weights**

| | | | ***ESTIMATE*** |
|---|---|---|---|
| **Global Risks Perception** | **<---** | **Environmental Attitudes** | 0,640 |
| **Green Purchase Behaviour** | **<---** | **Environmental Attitudes** | 0,402 |
| **Green Purchase Behaviour** | **<---** | **Global Risks Perception** | 0,428 |
| **Physical/Performance Perceived Risks** | **<---** | **Global Risks Perception** | -0,633 |
| **Financial Perceived Risks** | **<---** | **Global Risks Perception** | 0,229 |
| **PsicoSocial Perceived Risks** | **<---** | **Global Risks Perception** | -0,517 |
| **Convenience Perceived Risks** | **<---** | **Global Risks Perception** | 0,386 |

**Table 34 - Direct Effects and Mediation Direct and Indirect Effects.**

| ***RELATIONSHIP*** | ***DIRECT EFFECTS WITHOUT MEDIATION*** | ***DIRECT EFFECTS WITH MEDIATION*** | ***INDIRECT*** |
|---|---|---|---|
| Environmental Attitudes –> Green Purchase | 0,678 *** | 0,402 *** | 0,276 *** (partial mediation) |

*** $p$ <0,001

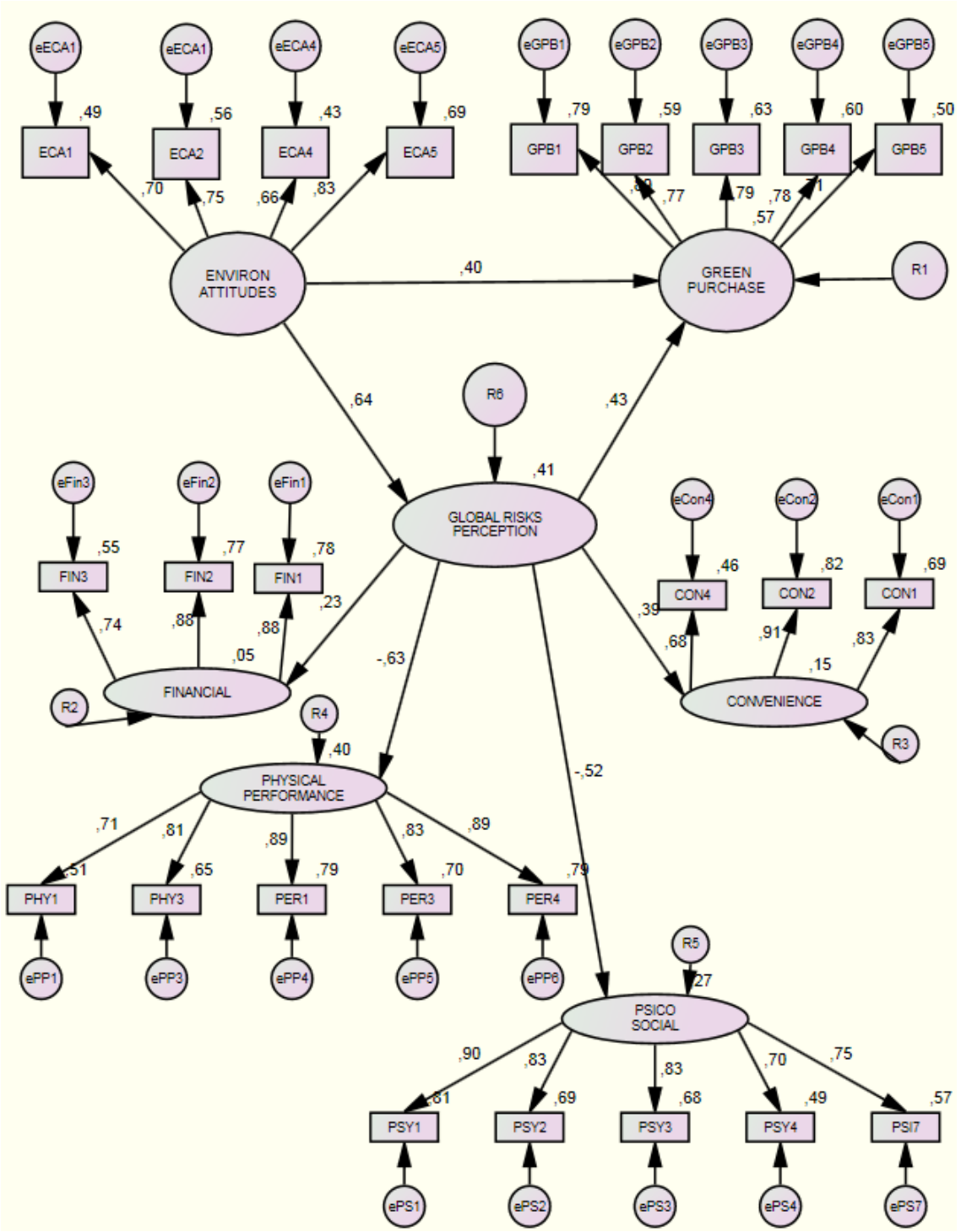


**Figure 38 - H2 Confirmatory Factor Model (SEM).**

As mentioned previously, Global Perceived Risk was proposed as a second-order reflective construct based on previous studies and it includes financial, physical, performance, convenience and psychosocial perceived risks that are first order constructs (Featherman and Pavlou, 2003).

A second order reflective construct means that its dimensions are different manifestations or actualizations of the multidimensional constructs (Jarvis et al., 2003; MacKenzie et al., 2005). The conceptualization of the Global Risks Perception second-order construct suggests that the separate dimensions of the construct –such as financial, physical, performance, temporal and psychosocial are actually different manifestations of the construct and as such "reflect" the construct's content.

Thus, in order to understand better the relation between each perceived risks and global risks perception, standardized regressions weights were assessed. As per Table 37, we could see that financial perceived risks (β =0,229, *p* = 0,001) and convenience perceived risks (β =0,386, *p* = 0,001) had a positive relation with global risks perception, which means that were perceived as risks. On the other hand, physical/performance perceived risks (β = -0,633, *p* = 0,001) and psychosocial perceived risks (β =-0,517, *p* = 0,001) had a negative relation with global risks perception, which means that are not perceived as risks, but as facilitators or motivators.

Once support for the main effects had been found, the next step was to include the suggested moderator variables into the model in order ascertain to H3 and gain further insights. H3 hypothesizes:

H3. The effect of Environmental Attitudes on Green Purchase Behaviour will be stronger with higher degrees of Collectivism vs. Individualism

The questions involving moderators address "when" or "for whom" a variable most strongly predicts or causes an outcome variable and are represented as illustrated on Figure 39.

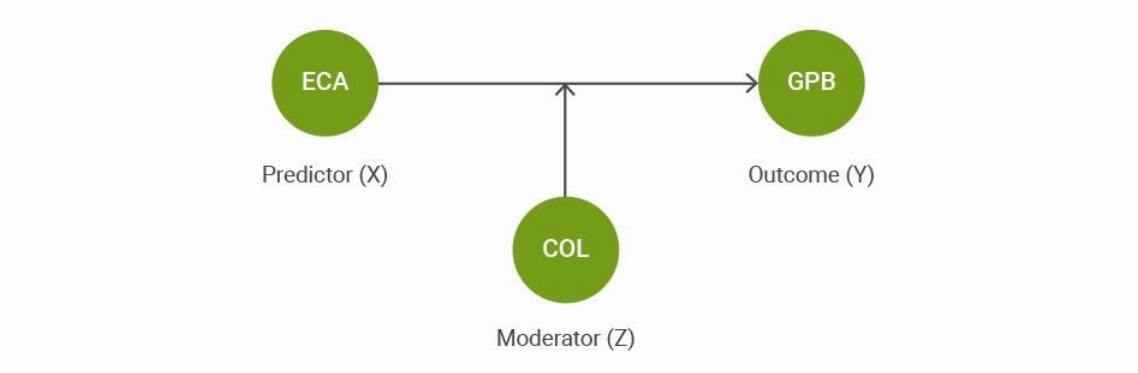


**Figure 39 - H2 – Environmental Attitudes – Green Purchase Behaviour moderated by Individualism/Collectivism (moderator effect).**

More specifically, a moderator is a variable that alters the direction or strength of the relation between a predictor and an outcome (Baron and Kenny, 1986). Thus, a moderator effect is an interaction where the effect of one variable depends on the level of another.

The objective is to examine whether moderator effects can increase our understanding of the relation between the predictor (environmental attitudes) and the outcome (green purchase behaviour), and individualism/collectivism was hypothesized as having a moderation effect over them.

Median splits were conducted in this study based upon the values of the moderator variable, collectivism vs. individualism.

The first step before assessing to the moderation effect is to test measurement invariance (Steemkamp and Baumgartner, 1995). Measurement invariance refers to "whether or not, under different conditions of observing and studying phenomena, measurement operations yield measures of the same attribute" (Horn and McArdle, 1992). If evidence supporting a measure's invariance is lacking, conclusions based on that scale are at best ambiguous and at worst erroneous. Without evidence of measurement invariance, the conclusions of a study must be weak.

Although a variety of techniques have been used to assess various aspects of measurement equivalence (Hui and Triandis, 1985), there is a general agreement that a multi-group confirmatory factor analysis model represents the most powerful and versatile approach for testing measurement invariance in consumer behaviour and marketing measures (Steenkamp and Baumgartner, 1995) and this approach was adopted for this study.

Three levels of Invariance were tested: configural invariance, metric invariance and structural variance (Steemkamp and Baumgartner, 1995).

The configural invariance approach is based on Thurstone's principle of simple structure (Horn et al., 1983). In essence, this principle states that the pattern of salient (non zero) and non salient (zero or near zero) loadings defines the structure of the measurement instrument.

Configural invariance is supported if the specified model with zero loadings on nontarget factors fits data well in both groups, all salient factor loadings are

significantly and substantially different from zero, and the correlations between the factors are significantly below unity. It is also necessary to show that there is discriminant validity between the (sub) factors comprising the construct under investigation (Steemkamp and Baumgartner, 1995).

Configural invariance investigates whether examinees from different groups employ the same conceptual framework to answer the test items (Horn and McArdle, 1992, Vanderberg and Lance, 2000, Cheung and Rensvold, 2002). Failure to demonstrate configural invariance indicates that different constructs were measured across groups.

Evidence of configural invariance is a prerequisite for metric invariance and further testing is not appropriate if configural invariance does not hold.

The configural invariance model was estimated. It is the baseline model (M0) against the other models (M1a M1b and M2) can be compared and, though, it is unconstrained.

The fit of the configural invariance model was satisfactory. The chi-square is significant ($\chi 2$ 1333,13 (*df*=536), *p* <0,001), RMSEA of 0,045, and the two other practical fit indices were also above the commonly recommended 0,90 level (CFI = 0,928, TLI = 0,919). All factor loadings were positive, high and significant in both groups and most part of standardized factor loadings exceeded 0,06. All the factor loadings are all positive, high and significant at the 0,05 level. The details can be found in Appendix 8.

Configural invariance indicates whether respondents in different groups respond or not to the items in the same way, so that obtained ratings can be meaningfully compared across groups.

Metric invariance affords a stronger test of invariance by introducing the concept of equal metrics or scale intervals across groups (Rock et al., 1978). If an item satisfies the requirement of metric invariance, difference scores on the item can be meaningfully compared across groups, and these observed item differences are indicative of similar cross-group differences in the construct. The factor loadings carry the information about how changes in latent scores relate to changes in observed scores. Thus, metric invariance can be tested by constraining the loadings to be the same across groups (Steenkamp and Baumgartner, 1998).

Meredith (1993) and Meredith and Millsap (1992) provided a definition of metric invariance. According to these authors, “an observed score is said to be measurement

invariant if a person's probability of an observed score does not depend on his/her group membership, conditional on the score. That is, respondents from different groups, but with the same true score, will have the same observed score. More formally, given a person's true score, knowing a person's group membership does not alter the person's probability of getting a specific observed score.

Assessing multi-group analysis, constraints were imposed on the loadings to test the invariance of the model across the groups. The objective is to assess equality of parameters across the two groups regarding measurement weights (loadings).

The model comparison, M0 and Model 1a, have shown a $\Delta\chi 2$ = 33,555, $p$=0,021. This means that measurement variance exists and there are loading differences between group and though model comparisons cannot be made with accuracy.

In order to identify where variance is rooted, values of critical ratios for differences between parameters were assessed. The parameters A10_2/A10_1 and A11_2/ A11_1 had a critical ratio difference of -2,326 and -4,308 respectively, as shown in Table 35. Since these values of critical ratio for differences are ≥|1,96|, this means that there are significant differences between the loadings of each group.

***Table 35 – Critical Ratio Differences between Parameters.***

| *PARAMETER* | *CRITICAL RATIO DIFFERENCES* |
|---|---|
| A1_2/A1_1 | 0,264 |
| A2_2/A2_1 | -0,353 |
| B1_2/B1_1 | 0,801 |
| A3_2/A3_1 | 0,568 |
| A4_2/A4_1 | 1,447 |
| A5_2/A5_1 | 0,548 |
| A6_2/A6_1 | -0,936 |
| A7_2/A7_1 | 0,271 |
| A8_2/A8_1 | -0,63 |
| A9_2/A9_1 | -1,236 |
| A10_2/A10_1 | -2,326 |
| A11_2/A11_1 | -4,308 |
| A12_2/A12_1 | 0,158 |

***Table 35 – Critical Ratio Differences between Parameters.***

| *PARAMETER* | *CRITICAL RATIO DIFFERENCES* |
|---|---|
| A13_2/A12_2 | -0,239 |
| A14_2/A14_1 | 0,634 |
| A15_2/A15_1 | -0,579 |
| A16_2/A16_1 | 0,831 |
| A17_2/A17_1 | -0,158 |
| A18_2/A18_2 | 0,753 |
| A19_2/A19_1 | 0,443 |

Then, Model 1b was estimated freeing A11_2/A11_1 parameters, because they had the highest critical ratio difference value. The model comparison (M0 and M1b) between the two groups have shown a $\Delta\ \chi2 = 15{,}181$, $p = 0{,}649$, which was not significant, meaning that there was metric invariance.

**Table 36 - χ2 Differences between Models.**

| *MODEL* | $\Delta\ X^2$ | *P* |
|---|---|---|
| **M0 and M1a** | 33,555 | 0,021 |
| **M0 and M1b** | 15,181 | 0,649 |

It was then adequate to proceed to structural invariance evaluation. The analysis of structural invariance tests whether the relations between the latent variables are the same in each group: collectivists and individualists. The procedure is analogous to testing for measurement invariance (Byrne, 1994). The model is assessed with additional constrains on the structural paths. A chi-square difference test is performed. If the baseline and constrained models are not significantly different, it is concluded that the structural model is invariant between the groups, and therefore there is no moderation effect on the structural relations. In turn, if the baseline and constrained models are significantly different, a moderator effect exists on the causal relationships in the model, and this effect varies by group (Byrne, 1994).

The model fit was assessed. Global fit [$\chi2\ (536) = 1333{,}12$ ($p < 0{,}001$); GFI = 0,87; CFI = 0,95; NFI = 0,88; IFI = 0,88; TLI = 0,92; RMSEA = 0,04] showed that the model adequately

fit the data. All factor loadings were significant in both groups and most part of standardized factor loadings exceeded 0,6 and thus allowed us interpretation of the results. All details can be found on Appendix 9 and in Figure 43 and Figure 44.

The model comparison (M2 and M1b with A11_2/A11_1 free) between the two groups have shown a $\Delta \chi 2$ =29,032, $\Delta$ *df* =7, *p* = 0,000. Therefore, significant differences (*p* <0,05) between the groups existed on the structural relations, which means that individualism/collectivism acted as a moderator variable.

Finally there was a need to locate the variant structural relations. Hair et al. (1995) state that *t*-test can be used to assess the statistical significance of the difference between two estimates on a common scale. The *t*-test was used to access the differences between the structural relations between the collectivism and individualism groups using the unstandardized estimates on the relation between environmental attitudes and green purchase behaviour (H3). The statistic has been assessed using the following formula:

$$t\text{-value} = ß_c - ß_i/[S.E_b{}^2+S.Eg^2]^{1/2}$$

Where, $\beta$ and S.E. are the unstandardised regression estimates and the standard errors for collectivists (c) and individualists (i).

**Table 37– Regression Estimate Weights and Standard Errors for Collectivist and Individualist models.**

| *MODEL* | *REGRESSION ESTIMATE WEIGHTS (β)* | *STANDARD ERRORS (S.E.)* |
|---|---|---|
| **Collectivism** | 0,666 | 0,214 |
| **Individualism** | 0,889 | 0,178 |

The results show that *t*-value=0,801 (0,05). Since it is less than 1,97 it means that there are no significant differences on the relation between environmental attitudes and green purchase behaviour between groups, (Hair et al., 1995). Therefore, H3 is rejected.

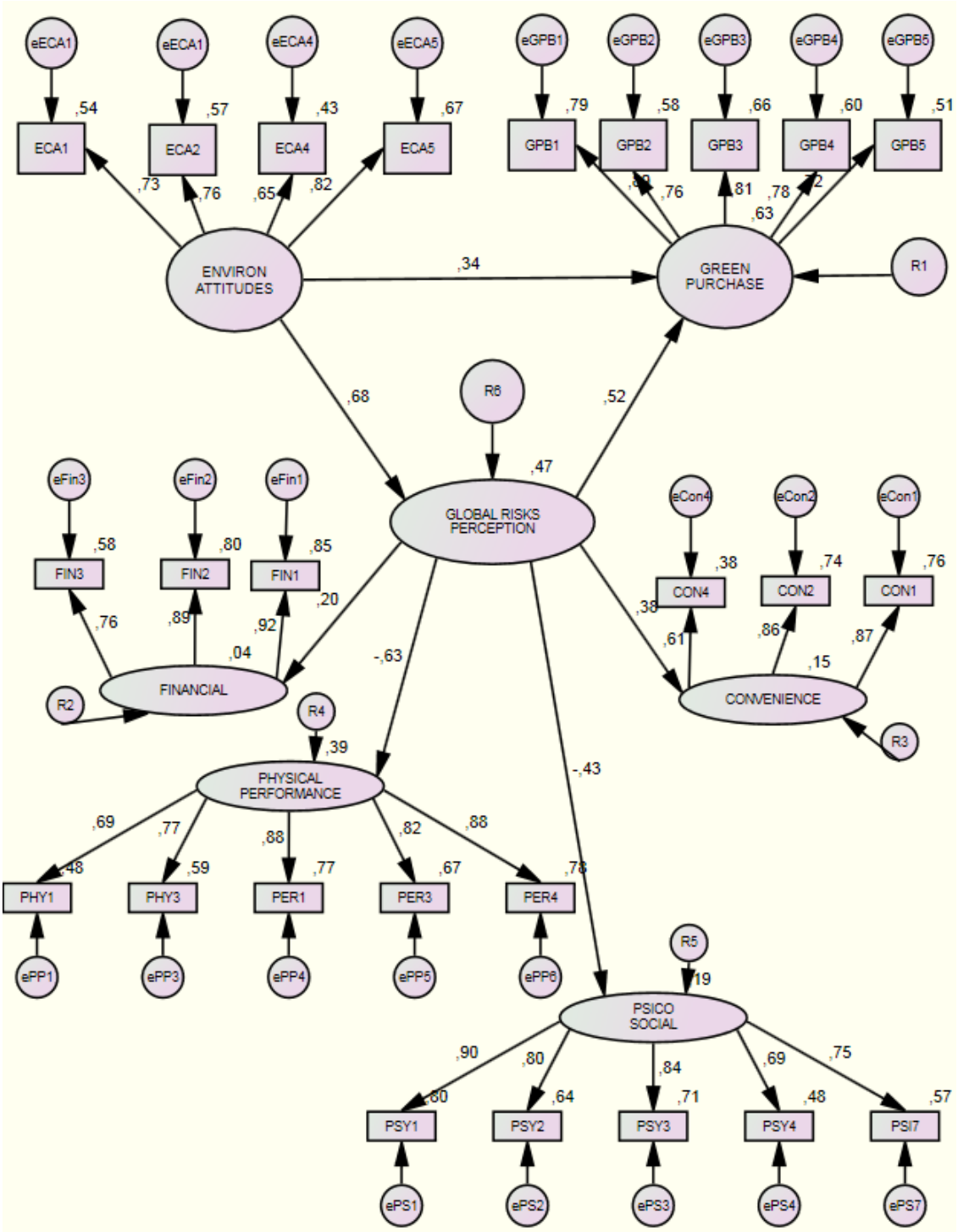


**Figure 40 - Model 0 (Unconstrained) – Collectivist Group.**

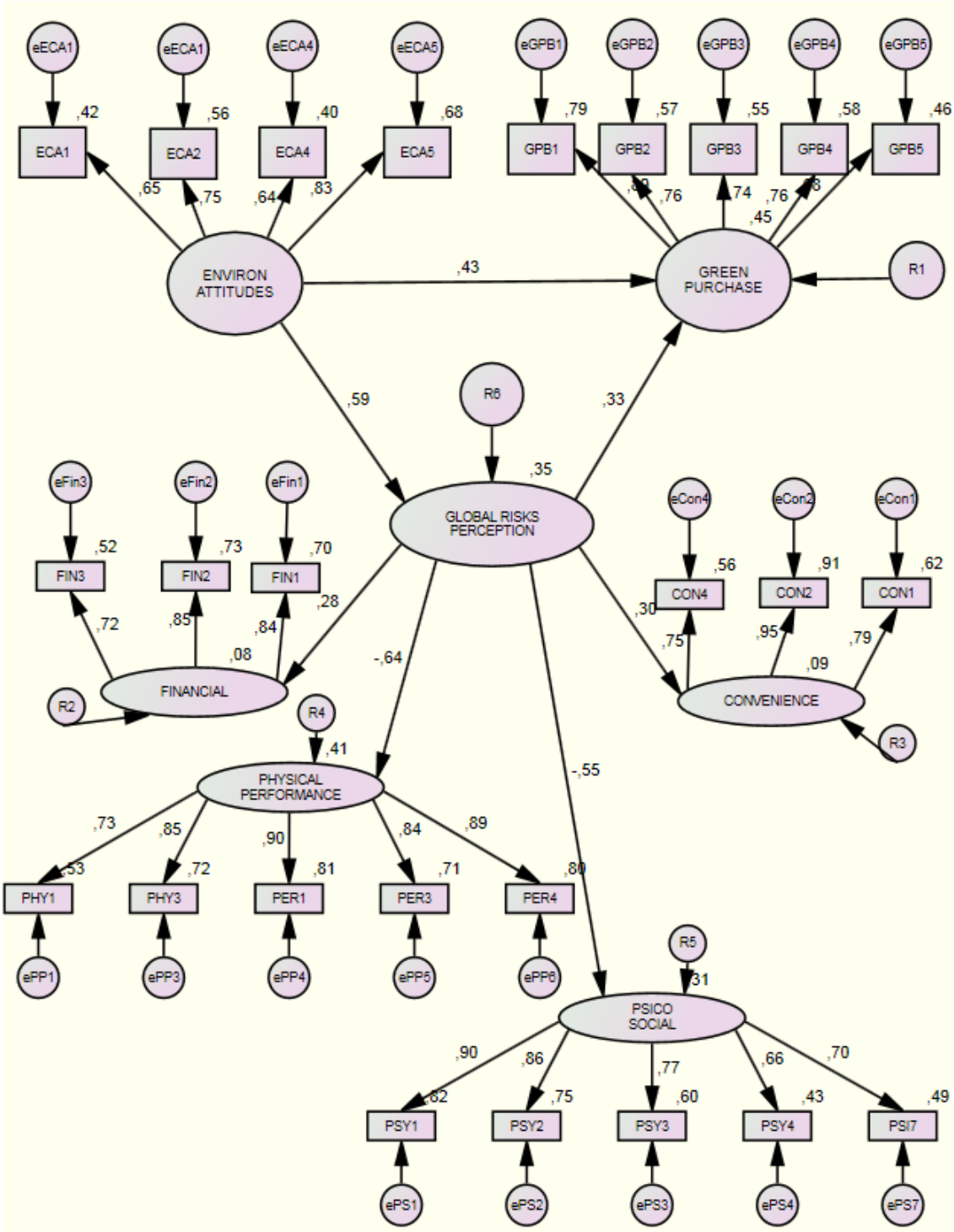


**Figure 41 - Model 0 (Unconstrained) – Individualist Group.**

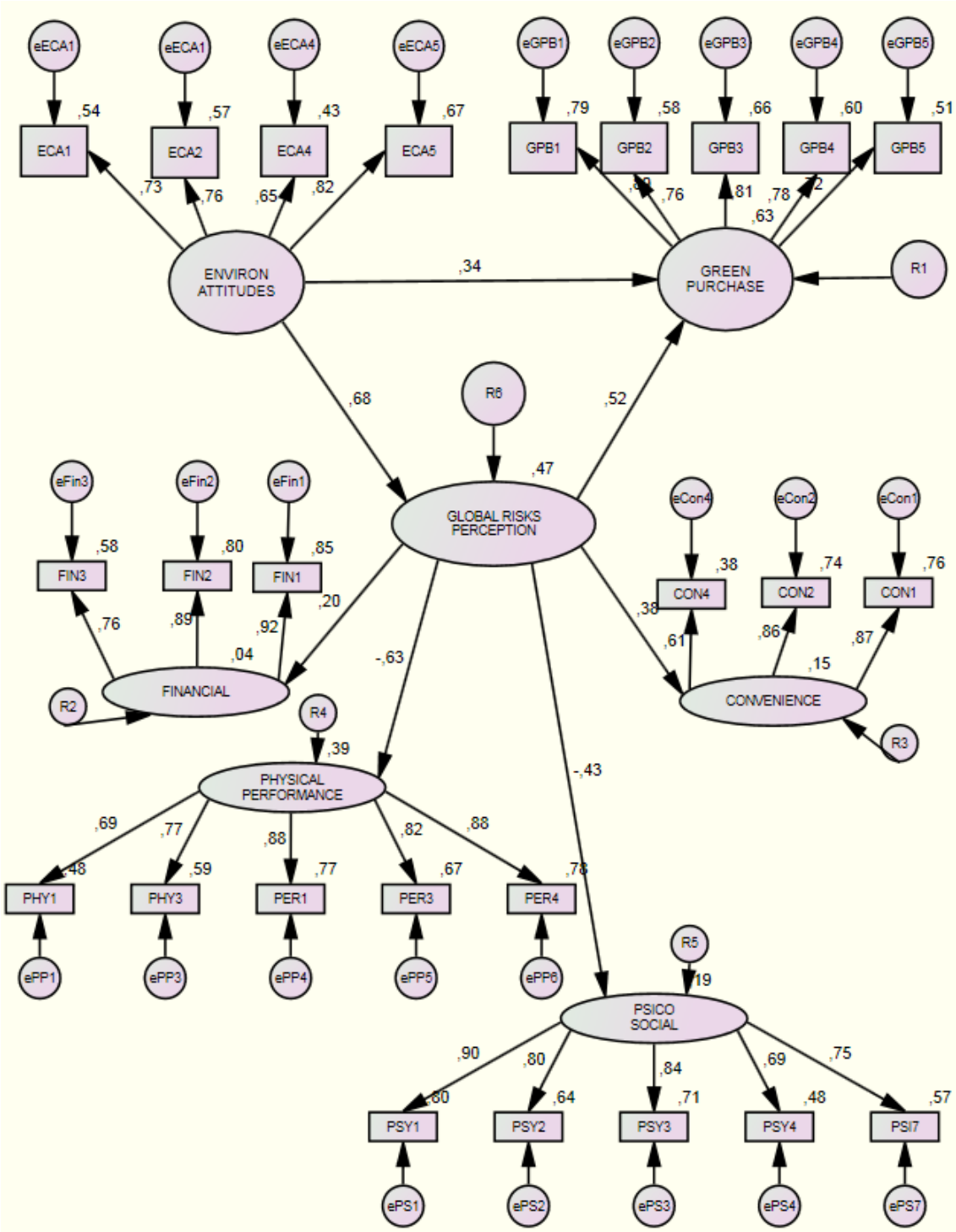


**Figure 42 – Model 2 (Constrained, without parameter A11_2/A11_1) – Collectivist Group.**

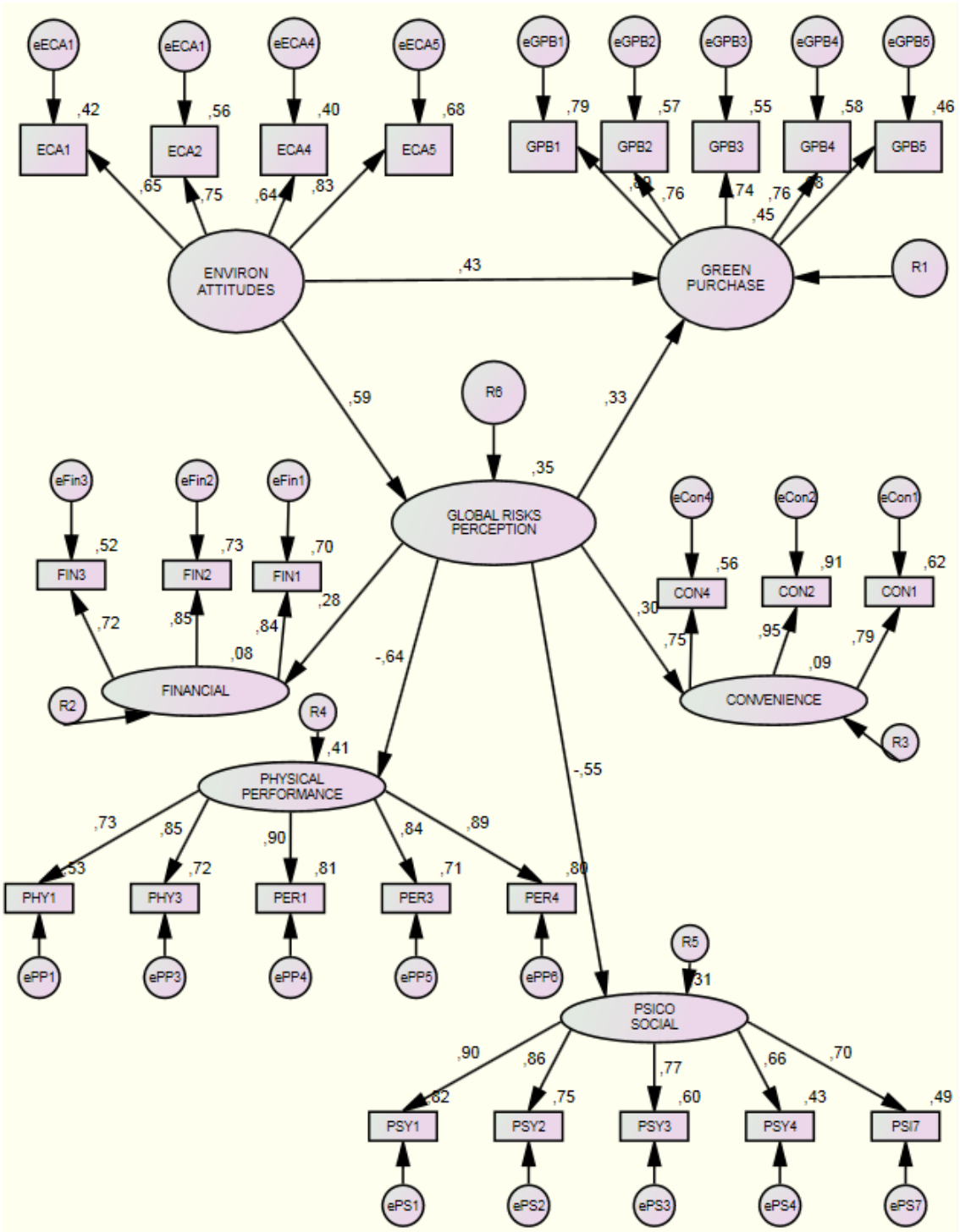


**Figure 43 – Model 2 (Constrained, without parameter A11_2/A11_1) – Individualist Group.**

## 6.7| Hypotheses Validation

The following Table 38 is a sum up of the hypotheses validation.

**Table 38- Hypotheses Validation**

| *HYPOTHESES* | *RESULT* |
|---|---|
| **H1.** There is a positive relation between Environmental Attitudes and Green Purchase Behaviour. | Confirmed |
| **H2.** Global Perceived Risks perception mediates the effect of environmental attitudes toward Green Purchase Behaviour. | Confirmed |
| **H3.** The effect of Environmental Attitudes on Green Purchase Behaviour will be stronger with higher degrees of Collectivism (vs. Individualism) | Rejected |

# 7| DISCUSSION AND CONCLUSIONS

*"Progress is impossible without change, and those who cannot change their minds cannot change anything", George Bernard Shaw*

The study results provided interesting useful information about green consumption, both for academia and for management. It has shown that environmental concern attitudes have a positive relation with green purchase behaviour and that global risks perception mediates partially this relation. These findings poses a great emphasis on global risks perception and on its relation with each one of perceived risks. At the end, individualism/collectivism as a moderator of the relation between environmental concern attitudes and green purchase behaviour was rejected, indicating that such relation is not significant in the context of this study. The following chapter discusses the specific and detailed conclusions of each hypotheses, its theoretical and methodological contributions as well as managerial and marketing implications.

## 7.1| Theoretical and Methodological Conclusions

Research suggests that the concern for the environmental problems is high and researchers and marketers are continuously seeking to explore if pro-environmental attitudes among consumers are predictive of their green buying behaviour (Mainieri et al., 1997).

One of the objectives of this study was to verify if consumers' environmental attitudes affect their green buying behaviour, and H1 was assessed:

**H1. There is a positive relation between Environmental Attitudes and Green Purchase Behaviour.**

The present study turned out that environmental attitudes are positively related with consumers' green purchase behaviour in the context of their general buying behaviour of green products frequently bought in supermarkets, such as food, personal care and home cleaning.

As mentioned in literature research chapter, research in green consumption faces some paradoxes. The “a-b gap theory” was applied by Barr et al. (2003) to environment, and the authors found that individuals, in spite of being environmentally concerned and aware of environmental issues, do not really guarantee that they will take that into consideration while purchasing.

Nevertheless, as explained in literature review, research in green consumption is controversial. On one hand there is a lack of evidences in consumer attitude theory with results that support both a positive relationship between attitude toward the environment and behaviour (Kellgren and Wood, 1986; Straughan and Roberts, 1999; Kim and Choi, 2003) as well as environmental attitude and green purchase behaviour (Grunert and Juhl, 1995; Schlegelmilch et al., 1996; Kellgren and Wood, 1986; Kim and Choi, 2005; Tilikidou, 2007), and on the other hand, weak relationships were also proved to exist (Mintel, 2006; Webster, 1975; Gill et al., 1986; Wiegel, 1985; Hines et al., 1987; Oskamp et al., 1991; Mainieri et al., 1997; Tanner and Kast, 2003).

According to Sun and Wilson (2008), conceptually, attitudes can be divided into general and specific. General attitudes are general measures of environmental concern (about environmental problems, for example) and specific attitudes are measures of particular attitudes (about products or behaviours).

Green purchase behaviour is defined as purchasing and consuming products that are benign towards environment (Mainieri et al., 1997; Chan, 2001; Kim and Choi, 2005; Mostafa, 2007). Green purchase behaviour can be observed in those consumers “who scrutinize labels, who use biodegradable garbage bags and biodegradable soaps and natural detergents, who purchase goods with biodegradable packaging and who refuse to purchase from restaurants where Styrofoam packages are used” (Schwartz and Miller, 1991; Minton and Rose, 1997).

The main outcome of this study is that environmental attitudes had a positive relation with green purchase behaviour, as had been predicted ($\beta$ = 0,678, $p$ <0,001). H1 was confirmed, meaning that the higher environmental attitudes are, the higher will be green purchase behaviour.

Results of some studies supported this conclusion about the positive relation between environmental attitudes and green purchase behaviour. In the past, Schlegelmilch et al. (1996) also argued that to be a green consumer there is a need to understand the

consequences of our actions and concluded that the attitudes revealed to be the most consistent inducer of green purchase behaviour. Other studies also confirmed the relation between environmental attitudes and green purchase behaviour (Arbuthnot and Lingg, 1975; Kellgren and Wood, 1986; Hines et al., 1987; Grunert and Juhl, 1995; Schlegelmilch et al., 1996; Lee and Holden, 1999; Kim and Choi, 2005; Tilikidou, 2007).

More recent studies are also aligned with the findings of the present study. Mostafa (2009) also explored the effect of cognitive factors on the green purchase behaviour of consumers and results showed that consumers' concern and attitudes about the environment and green purchase intention are significant factors in prevalence of consumers green behaviours.

*Greendex* (2010), a study conducted by *National Geographic* and *GlobeScan*, indicates that consumers are very concerned about the environment and this has been reflected on their daily consumption preferences.

Also Kim (2011) indicates that environmental attitudes are important determinants of green purchase behaviour.

Finally, Akehurst et al. (2012) re-examined the determinants of ecologically conscious consumer behaviour and results shown there's a positive relation with green purchase intention and behaviour.

To sum up, our hypotheses about environmental attitudes and green purchase behaviour was confirmed and there is a positive and significant relation.

Results also confirmed that scales that measure specific environmental attitudes work better than general ones (like NEP scale, for example) when the research problem is specific rather than generic (such as environmental problems in *latus* sense) and this conclusion might be relevant for future researches in the area and it is aligned with the conclusions of previous researches (Mainieri et al., 1997; Schlossberg, 1992; Hines et al., 1987; Van Liere and Dunlap, 1981; Maloney and Ward, 1973).

Finally, the findings have shown evidences that consumers are more concerned about environment and are trying to contribute to the environment positively, engaging in green buying behaviour.

*The mediator role of Global Perceived Risks towards Environmental Attitudes and Green Purchase Behaviour*

The second objective of this study was to verify whether consumers' perception of risks inherent to green products mediates the relation between environmental attitudes and green purchase behaviour, and H2 was assessed:

**H2. Global Perceived Risks perception mediates the effect of Environmental Attitudes toward Green Purchase Behaviour.**

Findings of the study show that global risks perception mediates partially the relation between environmental attitudes toward green purchase behaviour. The results showed that the magnitude of the association between environmental attitudes and green purchase behaviour was reduced when compared with the direct relation confirmed in H1 but remained positive and significant ($\beta = 0{,}402$, $p$ <0,001) and partial moderator effect was confirmed.

The role of global risks perception as a mediator between attitude and behaviour was alligned with previous studies (Campbell and Goldstein, 2001; Gurhan-Canli and Batra, 2004).

As per literature review, perceived risk is the subjective evaluation of a consumer about the probable consequences of inaccurate decisions and on this basis perceived risks regarding green products are defined as "expectation of negative environmental results related to purchase behaviour" (Chen and Chang, 2012). This variable is an overall perception and can be measured by criteria of "false environmental performance claim of the product", "damage to the environment with using the product", "charging penalties after usage" and "damage to the thought of people about using environmentally friendly products".

The results were also aligned with the theory of consumers' perceived risk. As stated previously, consumers perceive risk because they face uncertainty and potentially undesirable consequences as a result of purchases (Taylor, 1974; Dowling and Staelin, 1994). Therefore, the more risk they perceive, the less likely they will purchase. According to Gregg and Walczak (2008), if consumers realize the high risk of a product, it would be more likely that they do not buy it.

Outcomes also shown that perceived risks mediate the relation partially, which means that other variables rather than global risks perception might have also contributed to explain this relationship. Nevertheless, global perceived risks analysis have impact on the strength of the relation between environmental attitudes and green purchase behaviour, that decreases when global perceived risks were introduced into the model (on direct relation, $\beta = 0{,}678$, $p$ <0,001 and when mediator was added, $\beta = 0{,}402$, $p$ <0,001). This fact might also help to contribute to a better understanding of the a-b gap, because consumers perceive risks associated to green products and this inhibits their buying behaviour.

Thus, it is important to look deeper into the relation between each perceived risk analyzed on the study and global risks perception. Financial perceived risks and convenience perceived risks have a positive relation with global risks perception, which means that are perceived as risks. On the other hand, physical/performance perceived risks and psychosocial perceived risks have a negative relation with global risks perception, which means that are not perceived as risks, but as motivators. Although direct relation between each perceived risk and green purchase behaviour was not measured directly but as part of overall global risks perception, we can also have a look more deeply on each one and explore more and then consolidate the conclusions.

***Price and Convenience as major barriers***

Results of the present study have demonstrated that price and convenience are observed as perceived risks by consumers. These conclusions are aligned with Boivin et al. (2011).

Financial perceived risks (β=0,229, $p$=0,001) and convenience perceived risks (β=0,386, $p$=0,001) had a positive relation with global risks perception, which means that are perceived as risks.

Due to the lack of scale economies in production, green products are usually more expensive than conventional ones and consumers perceive green products as highly priced (Bonini and Oppenhiem, 2008). Although environmental attitudes induce green purchase decision, high prices can inhibit the actual purchase where consumers are price sensitive.

Some evidences that suggest that price is a major inhibitor of green consumption are presented by Schlossberg, 1992; Sriram and Forman, 1993; Ottman, 1994; Mainieri et al., 1997; Browne et al., 2000; Laroche et al., 2001; Fotopoulos and Krystallis, 2002; Holdworth, 2003; François-Valette and Florence, 2006; Pelsmaker and Janssens, 2007; Shaharudin et al., 2010; Young et al., 2010; Bray et al., 2011; Boivin et al., 2011.

In the specific case of biological products, consumers also perceive these products as expensive compared to conventional alternatives (Lea and Worsley, 2005; Magnusson et al., 2001; Radman, 2005). Magnusson et al. (2001) reported that many consumers consider price to be an important determinant of purchase.

Even so, some studies reveal that consumers who are concerned with the environment and are knowledgeable about the environment try to purchase green products and are less sensitive to price and are more willing to pay a premium for green products (Laroche et al., 2001; Bang et al., 2000).

Convenience was also perceived as a risk by the respondents of the present study. It refers to temporal perceived risks and includes the availability and accessibility to the product in the market, the information available about the product inside the store and in the packaging. In other words, consumers' perceived convenience regarding green product refers to how easily they perceive they can get it.

Non-availability of green products can negatively affect purchase especially if there was initial motivation for the product. The availability of green products in designated channels and adequate information on location can enhance consumes effort to locate them and make purchases. De Pelsmacker et al. (2005) also identified lack of availability of green products, disbelief of green claims and lack of information as the main reasons for less green consumption.

Lack of time is also seen as inconvenient to buy green products and it was listed as the first of five main barriers by the interviewees for purchasing greener products in the study conducted by Biel and Dahlstrand (2005). The findings of Young et al. (2010) also confirm lack of time for research, decision-making and the purchase as the first of five main barriers to purchase green products.

***Product Quality and Psychosocial factors as motivators***

Results of the present study have demonstrated that physical/performance perceived risks (β= -0,633, *p*=0,001) and psychosocial perceived risks (β=-0,517, *p*=0,001) had a negative relation with global risks perception, which means that are not perceived as risks, but as facilitators or motivators.

For some product categories, performance is considered as a perceived risk since consumers are reluctant on buying green products because they feel that performance is sacrificed to guarantee that the products are environmentally compliant (Sriram and Forman, 1993; Ottman, 1998; Picket-Baker and Ozaki, 2008). Hybrid cars, for example, are one of the product categories where consumers recognize that is the most environmental correct choice. Nevertheless, the battery life and the need for charging the batteries affects their functional perception. In this sense, consumers frequently doubt whether green attributes are affecting the product main functionality and whether this can be an obstacle for their effective purchase.

Boivin et al. (2011) concluded on their research that functional perceived risks regarding green product was partly verified, since it varied from category to category. Except for food and beverage and products that are perceived as working better when compared to conventional ones. For example, biological food is considered as more tasteful and with better quality as indicated by Fotopoulos and Krystallis' research (2002), in other product categories there is no consensus.

Physical risks refer to the injure to health inherent to the consumption or use of a certain product and in the case of green products it was expected to be the reverse, as actually was confirmed. For instance and as mentioned previously, in the case of organic food (like biological vegetables) consumers feel that they are better for their health. Padel and Foster (2005) found that health is an important factor for consumers when buying organics.

Since in the present study, the product categories involved green products typically bought in supermarket, namely biological food, personal care and home products, consumers had perceived that green products have greater performance and are better for health when compared to conventional ones.

More specifically regarding to biological and organic food, previous studies have demonstrated that these products are perceived as healthier than non-organic

alternatives (Lea and Worsley, 2005; Magnusson et al., 2001; Radman, 2005). Besides that, consumers distinguish organic food as having a higher vitamins and minerals content than conventional products (Lea and Worsley, 2005). Many studies have shown that the majority of consumers purchase organic products for health reasons (Chinnici et al., 2002; Makatouni, 2002; Padel and Foster, 2005; Squires et al., 2001; Hutchins and Greenhalgh, 1997).

Therefore, one important finding of this study is that physical and performance factors, which act like motivators, can be grouped into one dimension when applied to the product categories subjected to the study (i.e. biological food, personal care and home products categories typically bought in supermarket) since they are both perceived by the consumer as product quality of the product.

Psychosocial factors are also seen as motivators and affect negatively global risks perception. Psychological perceived risks are somehow related to what an extent consumer perceive as risky to choose a bad product which could have a negative impact on consumer's ego. The results are aligned with previous studies that indicate that green products have a positive connotation and consumers who buy these products tend to be more altruists (Roberts, 1996; Straughan and Roberts, 1999; Akehurst et al., 2012).

Social perceived risks relates to how the purchase decision will affect the opinions other people hold regarding the shopper. Some studies reveal that social pressure induced pro-environmental attitudes (Allcot, 2009; Ayres et al., 2009)

Some studies revealed that social pressure induced pro-environmentally behaviours. For example, homeowners have reduced energy consumption after receiving reports that compare their usage to neighbors (Allcott, 2009; Ayres et al., 2009)

Boivin et al. (2011) also found that psychosocial factors were found to have a significant impact on the purchase of socially responsible goods. This means that the purchase of green products might be perceived as positive for consumer's ego and socially it is seen as an action with positive impact and thus they act as motivators of green consumption, instead of perceived risks.

Other evidence is that global risks perception as a second order construct is suitable to assess to overall risk perception. The conceptualization of the global risks perception as a second-order construct suggested that the separate dimensions of the construct -

such as financial, physical, performance, temporal and psychosocial - are actually different manifestations of the construct and as such "reflect" the construct's content.

***The moderator role of Collectivism vs. Individualism towards Environmental Attitudes and Green Purchase Behaviour***

Understanding the influence of culture is central to business strategy. Culture is shared by all or almost all members of a social group and shapes one's attitudes and behaviour.

As mentioned in literature review, individualism/collectivism values define the relationships that individuals have in each culture and "the degrees to which people in a country prefer to act as individuals rather than members of groups" (Hofstede, 1994).

The third objective of this study was to verify whether cultural values, namely collectivism vs. individualism, moderate the relation between environmental attitudes and green purchase behaviour, and H3 was assessed:

**H3. The effect of Environmental Attitudes on Green Purchase Behaviour will be stronger with higher degrees of Collectivism vs. Individualism**

Recent reviews of the cross-cultural literature have concluded that individualism/ collectivism was the most prominent dimension compared to the others (Gelfand et al., 2007) which put in evidence that individualism/collectivism might have stronger predictive power than the other dimensions to explain pro-environmental behaviour and a positive impact on the relation between environmental attitudes and purchase behaviour.

The conclusions of Chan's (2001) research indicated that collectivism had influence on environmentally purchase behaviour. Kim (2011) also stated that cultural values as man-nature orientation and collectivism, ecological affect, and ecological knowledge (less evident) had significant impact on attitudes toward green purchases.

Research has indicated various ways in which personality, attitudes and behaviour differ in national cultures with predominantly collectivist values from those with national cultures where more individualistic values predominate (Triandis 1989, 1994; Hofstede, 1980). Determinism characterizes collectivist cultures, in which people

believe that the will of the group should determine members' beliefs and behaviour. In turn, self-determination characterizes individualistic, in which individuals believe that each person should determine his or her own beliefs and behaviour. In many ways the two orientations trade off individual freedom against collective protection.

Since environment is more of a collective matter than individual, and consistent with literature, it was expected that individualism/collectivism would have an important role to moderate the hypothesized relation. However, the outcomes of present study did not reject the null hypothesis, which means that the effect of environmental attitudes on green purchase behaviour will not be stronger with higher degrees of individualism vs. collectivism. Multi-group analysis was made and at the end the two-tailed t-test for the difference of the weights between groups was assessed and results showed that there were no significant differences between groups [(t-value=0,801 (0,05)].

The findings of our study seemed to support the idea that cultural values applied to individuals might not be categorized primarily individualist or collectivist because elements of both types co-exist in a given culture and person. Traditionally, Western cultures (USA, Europe, etc) are considered to be individualistic whereas Eastern cultures (India, Japan) are generally collectivistic. However, the generalizability of such assumptions has been tested in many studies. In fact, several intercultural communication scholars have emphasized the inadequacy of the simple individualism/collectivism dichotomy. For example, Schwartz (1990, p.151) has indicated "first, the dichotomy leads us to overlook values that inherently serve both individual and collective interests (e.g. maturity values), second, the dichotomy ignores values that foster the goals of collectives other than the in-group (e.g. universal pro-social values), and third, the dichotomy promotes the mistaken assumption that individualist and collectivist values each form coherent syndromes that are opposed to one another".

Kapoor et al. (2000) examined individualist/collectivist values in American, Indian and Japanese cultures and also found that there are inadequacies of conceptualizing individualism and collectivism as a dichotomy.

So, the results of our hypotheses highlighted that subtypes of individualist/collectivist values sometimes do not vary and are sometimes not opposed and that can explain why individualism/collectivism as moderator was rejected. Gudykunst et al. (1996) suggested that relational and personality factors might influence

individualist/collectivist orientation, and this evidence might be aligned with our conclusions towards environment. Moreover, these conclusions might also indicate that we should avoid stereotyping the cultural values of collectivism and environment attitudes and behaviour to be intrinsic to Eastern societies versus Western societies, more individualist. The discussion should be more focused at relational and personality factors that as we have seen, individualist and collectivism orientation can even co-exist depending on the context.

Finally, the proposed model to explore the relation environmental attitudes and green purchase behaviour with global perceived risks as a mediator and cultural values (individualism/collectivism) as a moderator revealed to be a useful framework that enabled to contribute to advanced knowledge in this area.

## 7.2| Managerial Conclusions

The need for environment protection is generalized. On our study, 95% of the respondents said that they are concerned about the environment. The conclusions also turned out that the higher environmental attitudes, the higher green purchase behaviour is.

***What can be done to incorporate these inputs into business strategy?***

There are companies that develop green marketing strategies as part of their social corporate responsibility. Most often, the activities are put aside the core business and are not incorporated on the business, since top managers associate the relation between environment and business as a something extrinsic to business itself. So, the first step is the need for managers and marketers to realize that green marketing can be profitable rather than only pure altruism.

According to Ottman (2008), there are two basics requirements of green marketing: top management involvement and long-term objectives that includes consumers' education.

Thus, one of the challenges that green marketing faces is to incorporate environmental issues into business and to invest into research and development in order to create products that are environmentally friendly but that at the same time keep their main

functionality and being also profitable driven. Then, the challenge for marketers will be to develop strategies targeting the environmental consumer.

On our study results, 76% of consumers said that they buy environmentally friendly products whenever possible and this indicates that consumers begun to value environmental issues gradually and consequently became more willing to purchase green products, depending on the context. Hence, the objective is posed on creating a positive context for them to buy green products, which goes back to traditional marketing "Rs": right product, right place, right time and right channel and also to the need to mitigate the perceived risks associated with green consumption. This objective is somehow linked with some important findings of this study, especially regarding global risks perception.

***Why perceived risks are important to green marketing, more specifically to explain green purchase behaviour?***

Perceived risk theory has intuitive appeal as it enables the comprehension of the green consumption from the consumer perspective. Since risks are something negative in its essence, the challenge is to understand why consumers don't buy green products. And then to address risk reduction strategies since we know that consumers are motivated to avoid mistakes in purchasing. In our case, when we had analyzed the relation between global risks perception and each perceived risk, we found out that only financial and temporal are perceived as risks and the others (physical/performance and psychosocial) are seen as facilitators. Thus, consumers perceive price and convenience as obstacles and in this case marketers should develop strategies and tactics to inhibit it. In turn, product quality and psychosocial factors act like motivators and here the challenge for marketers is to enhance these evidences. Global risk perception analysis regarding green products can also be useful in, targeting, positioning green products and for the segmentation of green consumers, for example to segment consumers, based their risk-reducing strategy usage.

***The price of green products: value matters***

The pricing strategy is a substantial part in the green marketing mix. Usually, the price of green products is higher than conventional products product and consumers in most part of the cases don't understand why they need to pay premium for these products.

In the present study, 80% of consumers said that green products are expensive compared to products that are not environmentally friendly. Moreover and as aforementioned, financial perceived risks have a positive relation with global risks perception, which means consumers' perceive it as a risk and an obstacle to green consumption. Due to this fact, price is a determining factor for consumers when confronting the choice between a green product and a conventional one.

Most part of times, consumers have difficulties to pay premium prices and they only opt for green products when they are at the same price, quality and other conditions as conventional products.

For marketers it is crucial to inform consumers why green products are more expensive and, most important, to explain the value for the money.

According to Polonsky and Rosenberger (2001) a green product does not necessarily mean that for consumer there is a higher cost if we take into consideration the total cost of ownership of the product along its life-cycle. According to these authors, there are two types of costs: initial investment and long-term costs. Green products often require higher initial costs but in long-term, it will help to save some money. For example, hybrid vehicles usually have a higher initial price but in long-term perspective consumers can save more because energy costs are saved. For marketers it will be necessary to deliver consumers enough information concerning the cost-savings in the long-term when they have premium prices on their products.

For example, in 2005, Tide had launched a campaign called "Coldwater Challenge". This marketing campaign addressed the money saved by washing in cold water and the product's deep cleaning and whitening properties. The focus on the communication was on the improvements made on the product that enabled to clean and at the same time to protect the environment through less energy consumption. Here, consumers were educated to understand why they would pay more for this detergent, and they were informed that in a long-run cost would be saved and at the same time they were protecting the environment.

Value for money is a key point for green marketers to focus, since there is an association between perceived value for money and how often people buy green products (Polonsky and Rosenberg, 2001). So, marketers can help consumers to identify environmentally friendly products and educating them about the value for the

money. This way, consumers will perceive that green products have more value and this can help to reduce consumer uncertainty.

So, the pricing strategy in green marketing strategy is a key factor for its success and the challenges for marketers are on educating consumers for the value for the money. And also on finding a balance and combine the consumers' price sensitivity in order to reduce the associated perceived risk. For marketers, is also important to segment the consumers and to target consumers that are already willing to pay premium for green products. In terms of tactics it is important to utilize packaging that highlight the benefits of the product and of green consumption and to explicit why they should buy green products. For example, in The Body Shop stores, info cards, window displays and videos help to inform people about the environmental and social effects of green consumption. This way, the brand is also educating consumers about the company's natural ingredients, earth friendly manufacturing and policy of purchasing from developing countries and at the end it contributes to deliver the message about the value for the money.

***Green products on the right place, on right time***

Lack of information is often mentioned as a reason for non-buying green products and this is related with temporal perceived risks as it has implicit the notion of time loss. In our study, 72% of respondents said that they need to spend some time inside the store before buying the products, as first they want to read the information and compare them. Packaging plays a very important role and cannot be neglected for a company which adopts a green marketing strategy. Besides the material of the package itself (biodegradable or recycled), it should have environmental information to catch consumers' attention and provide some environmental advices. Ottman (2008) highlighted that green communication should "be transparent" to ensure consumers that company's green claims are real and meaningful. Polonsky and Rosenberger (2001) pointed out that over-claim of green promotion may be perceived by consumers as green washing and ignored. So, transparency and credibility in communication should never overstated, otherwise expectation about the products cannot be reached. In other words, for marketers and also for retailers, there is a need to provide more information and to avoid over-claiming the green promises of the product.

Regarding convenience and temporal perceived risks we need also to take into consideration that non-availability of green products can negatively affect the intention to buy especially if there was initial motivation for the product. In our study, 72% of consumers said that these products are often difficult to find for sale.

The availability of the green products is related with distribution strategy and it requires company to provide to consumers not only the access to their products but also to assure it is done in a greener way. The delivery process includes transportation, distribution channels, and at the end the point of sales. Marketers need to make an effort to place green products as broadly as possible. Nevertheless, the place strategy and point of sales selection should also be consistent with the environmental positioning and this differentiates the company from competitors and brings competitive advantage. In other words, the availability of products in the right channels and adequate information at point of sales can enhance consumes effort to locate and make purchases.

***Enhancing product quality as a key factor***

The outcomes of our study enables to conclude that physical and performance perceived risks contribute negatively to global risks perception, which means that it is not perceived by consumer as a barrier but as a motivator. The items of these dimensions were focused on the product quality of the products (biological food, beverage, green products home and personal care). On our study, 76% of the consumers said that these products are of superior quality compared to regular ones and 83% reported that these products are healthier. So, two important aspects to be retained: consumers perceive green products as products with superior quality and there is a positive association with health. This means a great opportunity for green products to stand out from others. Perceived quality represents consumers' overall evaluation on the superiority of a product and it is influenced by consumers' subjective perception and environmental contexts (Zeithaml et al., 1996).

The perceived quality associated with green products, especially the ones subjected to the present study is increasing also due to the trend that exists throughout the world related with the consumption of biological/organic products associated with health concerns, animal welfare considerations and concern about the environment. The main reason why consumers recognize extra benefits on these products might be a

combination between the search for a healthier lifestyle and environmental protection contribution.

Therefore, what makes green products of these categories unique in terms of quality?

According to Hansen (2001), the characteristics of organic foods can be grouped into general and commodity-specific attributes. General attributes refer to: food safety and human health, environmental effects and farm animal welfare aspects. Commodity-specific attributes include: visual appeal, nutritional value, taste, freshness, etc.

According to the author, consumers may not correctly differentiate between green and conventional products with respect to their general attributes. They might be able to recognize the unique taste, visual appeal or freshness of particular products, but these sensory characteristics alone, may not be sufficient in determining whether a product is green or not.

Therefore, managers and marketers should implement tactics that enable consumers to understand the differences between green products and conventional ones enhancing quality as a key factor. Exogenous factors as certification in quality, product labels and package that highlight nutrition values (regarding to food/beverage) and health benefits, information about production process, etc, might thereby enable consumers to more clearly assess product quality.

Enhancing product quality might help to increase the value for the money of green products by consumers. It will also contribute to decrease financial perceived risks as cost might be considered as an investment for “good health”, in a long-term perspective.

***Exploring the role of self-identity and peers influence***

The results of our study turned out that psychosocial perceived risk contribute negatively to global risks perception, which means that it is not perceived by consumer as an obstacle but as a motivator. On our study, 68% of the consumers said that to opt for these products brings them personal satisfaction and 58% reported that other people react positively when they know they bought green products. So, consumers see psychosocial benefits in their actions, their expectations are influential in shaping consumer behaviour and we can expect this to be a continuing influence in driving eco-activities.

Nevertheless, to take advantage of this motivator, marketers need to answer to this question: do consumers buy green products to fulfill their environmental protection goals or they buy it because it is seen by peers an altruistic action and contributes to enhance somehow their social status?

Griskevicius et al. (2010) have made a series of experiments on the motivators behind shopping found that consumers are more likely to "go green" on the street where they can be seen making altruistic choices, than for example shopping green products online. So, when consumers are being watched by their peers they are more willing to demonstrate green purchase behaviour. Basically, these results suggest that being green is not just about being altruistic, but also about consumers wanting others to see their altruism.

Maynard (2007) reported the top five reasons why Toyota Prius owners bought their cars and environmental protection was last on the list. Instead, Prius owners indicated that the number one reason for purchasing the car was because it “makes a statement about me.” What statement does the Prius make? “It shows the world that its owner cares”.

For marketers, the challenge is to activate the psychosocial motivators. Since impression on others associated with altruism matters there is a need to provide regular feedback about the campaigns implemented to consumers to show they are making a difference. This reinforces behaviour from green consumers and motivates others to consider the environment when buying. Other challenge is to activate somehow the status motives. Evidences from the studies cited support that relatively more expensive green products become more attractive because owing such products can signal both pro-sociality and wealth.

***Dichotomies based on individualism/collectivism orientations are not that relevant***

Results of our study revealed that the effect of environmental attitudes on green purchase behaviour will not be stronger with higher degrees of individualism vs. collectivism.

These findings support the idea that cultural values applied to individuals might not be categorized primarily individualist or collectivist because elements of both types co-exist in a given culture and person.

For managers and marketers, these conclusions might also indicate that on campaign communication there is no need to highlight individualism/collectivism claims, because it might not be effective to strengthen the relation between environmental attitudes and green purchase behaviour.

To sum up, the proposed framework provides relevant insights for marketers to better understand the relation between environmental attitudes and green purchase behaviour. Finally, considering the role of the global risks perception in the attitudes-behaviour relation regarding green consumption may enable marketing managers to develop strategies to mitigate the perceived risks as price and convenience and enhance motivators such as product quality and psychosocial factors. At the end the main objective is that green consumption can foster economic growth towards sustainability, because:

> *"Economic growth and environmental protection are not at odds. They're opposite sides of the same coin if you're looking at longer-term prosperity" - Henry Paulson.*

## 7.3| Limitations and Future Research

This research was conducted by generating a non-random, heterogeneous sample and hence the results may not be generalized beyond the sample frame.

The results apply most directly to the sample. The concepts and behavioural items used in the study can be traced, at least partially, to culture specific factors. Although this limits the generalizability of the results, it simultaneously increases their practical relevance.

Additionally, even though the hypothesized relationships were previous researches, longitudinal and/or experimental studies were interesting to be implemented in order to have richer insights among the relationships between the variables of this study.

Moreover, the data used in this study was collected from one source (self-reported) using one instrument. Measurement of perceptions and attitudes can meaningfully be

explored and future studies can reduce the possibility of common method variance by collecting data from different sources. For instance, one person can be asked to provide information about their environmental concern, and their close friends be asked to provide information about their likelihood of buying green products.

Despite these limitations, the study provides additional and generalizable insights to the understanding of green purchases. Specifically, focusing on the relation between environmental concern attitudes and green purchase behaviour, taking account of global risks perception and cultural values (individualism/collectivism), it was possible to uncover barriers and motivators regarding green consumption and to formulate general steps to adopt to support sustainable development.

For future research, green consumers can be divided into different groups, and future studies can segment them accordingly to further investigate their perceived risks regarding green products. Some control variables should be added in the model (for example, age, sex, or psychographic, etc) that could highlight relevant effects of these variables on the considered factors. Applying this model to other product categories is also recommended for more advanced knowledge in the area. Also a closer examination of the consumer's behaviour towards green products might provide more detailed insight into increasing positive evaluations of these products. Factors for additional study might include package, design, product, location of the product in the stores, or brand loyalty.

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# APPENDIX

## APPENDIX 1| FOCUS GROUP – SCRIPT (5TH JANUARY 2015)

Good morning,

First of all, thank you for having accepted the invitation.

The purpose of this meeting is to talk about green products consumption and your contribution is very important for my doctoral thesis.

I would like to ask you to respond truthfully and accurately as possible to the questions. My role in this discussion is the moderator / facilitator, and though you may talk to each other and discuss viewpoints, whenever necessary.

Question 1: Do you consider yourself environmentally concern? What environmental problems worries you the most?

Question 2: Do you usually buy green products? If yes, in which product categories? (Examples: fruit / organic vegetables, saving lamps, shampoos with natural ingredients, appliances class A, etc)

Question 3: How often do you usually buy green products in the following categories: food and beverages, hygiene products, electronic consumer products, appliances, durable goods (hybrid cars, bicycles, etc.).

Question 3: What are the main obstacles do you face regarding to the purchase of these products?

Thanks for your participation!

## APPENDIX 2|
## PRE-TEST RESULTS

The objectives were to assess the realiability of the scales and to test the following relations:

- The higher Environmental Attitudes is the higher Green Purchase Behaviour will be.
- Financial Perceived Risks (price) negatively impact Green Purchase Behaviour.
- Physical risks (good for health) positively impact Green Purchase Behaviour.
- Performance Perceived Risks have a negative impact in Green Purchase Behaviour.
- Convenience Perceived Risks have a negative impact in Green Purchase Behaviour.
- Social Perceived Risks have a positive impact in Green Purchase Behaviour.
- Psychological Perceived Risks have a positive impact in Green Purchase Behaviour.
- Colectivism has a positive relation with Green Purchase Behaviour.

**RELIABILITY**

**Environmental Attitudes**

***RELIABILITY STATISTICS***

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| 0,689 | 0,765 | 5 |

***ITEM STATISTICS***

| | ***MEAN*** | ***STD. DEVIATION*** | ***N*** |
|---|---|---|---|
| Estou muito preocupado com o ambiente. | 5,76 | 1,455 | 29 |
| Estaria disposto a reduzir os meus padrões de consumo para proteger o ambiente. | 5,97 | ,778 | 29 |
| Seria capaz de doar algum dinheiro para contribuir para a protecção de animais selvagens. | 5,10 | 1,291 | 29 |
| Pedi à minha família para reciclar alguns dos produtos que utilizamos. | 5,62 | 1,425 | 29 |
| Estaria disposto(a) a alterar os meus padrões de consumo para proteger o ambiente. | 6,10 | 0,673 | 29 |

***ITEM-TOTAL STATISTICS***

| | ***SCALE MEAN IF ITEM DELETED*** | ***SCALE VARIANCE IF ITEM DELETED*** | ***CORRECTED ITEM-TOTAL CORRELATION*** | ***SQUARED MULTIPLE CORRELATION*** | ***CRONBACH'S ALPHA IF ITEM DELETED*** |
|---|---|---|---|---|---|
| **Estou muito preocupado com o ambiente.** | 22,79 | 11,170 | 0,210 | 0,108 | 0,766 |
| **Estaria disposto a reduzir os meus padrões de consumo para proteger o ambiente.** | 22,59 | 11,180 | 0,680 | 0,630 | 0,586 |
| **Seria capaz de doar algum dinheiro para contribuir para a protecção de animais selvagens.** | 23,45 | 9,828 | 0,473 | 0,285 | 0,627 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **Pedi à minha família para reciclar alguns dos produtos que utilizamos.** | 22,93 | 8,852 | 0,524 | 0,420 | 0,604 |
| **Estaria disposto(a) a alterar os meus padrões de consumo para proteger o ambiente.** | 22,45 | 11,828 | 0,658 | 0,601 | 0,609 |

**With ECA_1 deleted**

*RELIABILITY STATISTICS*

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,766 | 0,818 | 4 |

*ITEM-TOTAL STATISTICS*

| | **SCALE MEAN IF ITEM DELETED** | **SCALE VARIANCE IF ITEM DELETED** | **CORRECTED ITEM-TOTAL CORRELATION** | **SQUARED MULTIPLE CORRELATION** | **CRONBACH'S ALPHA IF ITEM DELETED** |
|---|---|---|---|---|---|
| **Estaria disposto a reduzir os meus padrões de consumo para proteger o ambiente.** | 16,83 | 7,719 | 0,658 | 0,612 | 0,694 |
| **Seria capaz de doar algum dinheiro para contribuir para a protecção de animais selvagens.** | 17,69 | 6,150 | 0,523 | 0,284 | 0,747 |

*ITEM-TOTAL STATISTICS*

| | SCALE MEAN IF ITEM DELETED | SCALE VARIANCE IF ITEM DELETED | CORRECTED ITEM-TOTAL CORRELATION | SQUARED MULTIPLE CORRELATION | CRONBACH'S ALPHA IF ITEM DELETED |
|---|---|---|---|---|---|
| **Pedi à minha família para reciclar alguns dos produtos que utilizamos.** | 17,17 | 5,076 | 0,633 | 0,412 | 0,694 |
| **Estaria disposto(a) a alterar os meus padrões de consumo para proteger o ambiente.** | 16,69 | 8,150 | 0,668 | 0,601 | 0,708 |

*SCALE STATISTICS*

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 28,55 | 15,328 | 3,915 | 5 |

**Green Purchase Behaviour**

*RELIABILITY STATISTICS*

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,828 | 0,827 | 5 |

*ITEM STATISTICS*

| | *MEAN* | *STD. DEVIATION* | *N* |
|---|---|---|---|
| **Compro produtos "amigos do ambiente" sempre que possível.** | 4,93 | 1,486 | 29 |
| **Compro produtos biológicos sempre que possível.** | 4,48 | 1,682 | 29 |
| **Utilizo produtos feitos de materiais reciclados sempre que possível.** | 4,66 | 1,421 | 29 |
| **Tenho a preocupação de reduzir o desperdício em casa sempre que possível.** | 6,10 | ,817 | 29 |
| **Tenho a preocupação de reciclar o desperdício em casa sempre que possível.** | 5,62 | 1,474 | 29 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **Compro produtos "amigos do ambiente" sempre que possível.** | 20,86 | 17,409 | 0,782 | 0,791 | 0,744 |
| **Compro produtos biológicos sempre que possível.** | 21,31 | 15,579 | 0,821 | 0,832 | 0,728 |
| **Utilizo produtos feitos de materiais reciclados sempre que possível.** | 21,14 | 17,766 | 0,795 | 0,804 | 0,742 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **Tenho a preocupação de reduzir o desperdício em casa sempre que possível.** | 19,69 | 24,936 | ,455 | ,388 | ,840 |
| **Tenho a preocupação de reciclar o desperdício em casa sempre que possível.** | 20,17 | 22,148 | 0,360 | 0,371 | 0,868 |

*SCALE STATISTICS*

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 25,79 | 29,313 | 5,414 | 5 |

**Financial Perceived Risks**

**RELIABILITY STATISTICS**

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,754 | 0,767 | 3 |

*ITEM STATISTICS*

| | *MEAN* | *STD. DEVIATION* | *N* |
|---|---|---|---|
| **São demasiado caros em relação aos produtos que não são ecológicos.** | 5,17 | 1,649 | 29 |
| **Normalmente é necessário pagar mais por estes produtos.** | 5,79 | 1,013 | 29 |
| **Tenho dúvidas que estes produtos tenham um preço que esteja de acordo com o seu valor.** | 4,31 | 1,442 | 29 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **São demasiado caros em relação aos produtos que não são ecológicos.** | 10,10 | 4,167 | 0,716 | 0,537 | 0,509 |
| **Normalmente é necessário pagar mais por estes produtos.** | 9,48 | 7,473 | 0,579 | 0,412 | 0,716 |
| **Tenho dúvidas que estes produtos tenham um preço que esteja de acordo com o seu valor.** | 10,97 | 5,892 | 0,534 | 0,316 | 0,728 |

*SCALE STATISTICS*

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 15,28 | 11,707 | 3,422 | 3 |

**Physical Perceived Risks (Health)**

*RELIABILITY STATISTICS*

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,864 | 0,866 | 3 |

***ITEM STATISTICS***

| | *MEAN* | *STD. DEVIATION* | *N* |
|---|---|---|---|
| **Estes produtos são bons para a minha saúde.** | 5,76 | 1,154 | 29 |
| **Existem menos efeitos secundários para a minha saúde quando uso/consumo estes produtos.** | 5,52 | 1,405 | 29 |
| **Estes produtos são melhores para a minha saúde que os normais.** | 5,48 | 1,214 | 29 |

***ITEM-TOTAL STATISTICS***

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **Estes produtos são bons para a minha saúde.** | 11,00 | 6,143 | 0,662 | 0,460 | 0,878 |
| **Existem menos efeitos secundários para a minha saúde quando uso/consumo estes produtos.** | 11,24 | 4,690 | 0,756 | 0,631 | 0,804 |
| **Estes produtos são melhores para a minha saúde que os normais.** | 11,28 | 5,207 | 0,827 | 0,692 | 0,730 |

***SCALE STATISTICS***

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 16,76 | 11,261 | 3,356 | 3 |

**Performance Perceived Risks (Functional)**

*RELIABILITY STATISTICS*

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,907 | 0,905 | 4 |

*ITEM STATISTICS*

| | *MEAN* | *STD. DEVIATION* | *N* |
|---|---|---|---|
| **Os produtos amigos do ambiente são superiores em qualidade do que os produtos normais.** | 5,21 | 1,177 | 29 |
| **Estes produtos são mais eficientes que os normais.** | 4,38 | 1,293 | 29 |
| **Estes produtos são mais eficazes que os normais.** | 4,34 | 1,289 | 29 |
| **Em termos de qualidade estes produtos são melhores.** | 5,14 | 1,060 | 29 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **Os produtos amigos do ambiente são superiores em qualidade do que os produtos normais.** | 13,86 | 10,766 | 0,794 | 0,699 | 0,879 |
| **Estes produtos são mais eficientes que os normais.** | 14,69 | 9,507 | 0,890 | 0,984 | 0,842 |
| **Estes produtos são mais eficazes que os normais.** | 14,72 | 9,707 | 0,860 | 0,982 | 0,854 |
| **Em termos de qualidade estes produtos são melhores.** | 13,93 | 12,424 | 0,634 | 0,485 | 0,930 |

*SCALE STATISTICS*

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 19,07 | 18,281 | 4,276 | 4 |

**Convenience Perceived Risks (Temporal)**

*RELIABILITY STATISTICS*

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,771 | 0,775 | 4 |

*ITEM STATISTICS*

| | *MEAN* | *STD. DEVIATION* | *N* |
|---|---|---|---|
| **Estes produtos muitas vezes são difíceis de encontrar disponíveis no mercado.** | 4,86 | 1,481 | 29 |
| **Normalmente, tenho que procurar estes produtos em diversas lojas até os encontrar.** | 4,72 | 1,386 | 29 |
| **Perco algum tempo na loja antes de comprá-los, pois primeiro há quer ler a informação e compará-los.** | 4,76 | 1,480 | 29 |
| **Estes produtos são dificeis de encontrar dentro da própria loja.** | 4,17 | 1,391 | 29 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **Estes produtos muitas vezes são difíceis de encontrar disponíveis no mercado.** | 13,66 | 11,877 | 0,536 | 0,559 | 0,737 |
| **Normalmente, tenho que procurar estes produtos em diversas lojas até os encontrar.** | 13,79 | 11,170 | 0,697 | 0,643 | 0,652 |
| **Perco algum tempo na loja antes de comprá-los, pois primeiro há quer ler a informação e compará-los.** | 13,76 | 12,904 | 0,419 | 0,356 | 0,797 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **Estes produtos são dificeis de encontrar dentro da própria loja.** | 14,34 | 11,377 | 0,665 | 0,516 | 0,669 |

*SCALE STATISTICS*

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 18,52 | 19,544 | 4,421 | 4 |

**Social Perceived Risks (Functional)**

*RELIABILITY STATISTICS*

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,919 | 0,920 | 3 |

*ITEM STATISTICS*

| | *MEAN* | *STD. DEVIATION* | *N* |
|---|---|---|---|
| **As outras pessoas reagem positivamente quando sabem que compro estes produtos.** | 3,83 | 1,583 | 29 |
| **Acredito que ao comprar estes produtos tem impacto positivo para a minha imagem na sociedade.** | 3,72 | 1,811 | 29 |
| **Optar por estes produtos contribui para uma melhoria da imagem que os outros têm a meu respeito.** | 3,28 | 1,688 | 29 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **As outras pessoas reagem positivamente quando sabem que compro estes produtos.** | 7,00 | 11,286 | 0,799 | 0,642 | 0,914 |
| **Acredito que ao comprar estes produtos tem impacto positivo para a minha imagem na sociedade.** | 7,10 | 9,525 | 0,849 | 0,736 | 0,876 |
| **Optar por estes produtos contribui para uma melhoria da imagem que os outros têm a meu respeito.** | 7,55 | 10,113 | 0,869 | 0,759 | 0,856 |

*SCALE STATISTICS*

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 10,83 | 22,291 | 4,721 | 3 |

**Psychological Perceived Risks**

*RELIABILITY STATISTICS*

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,926 | 0,925 | 4 |

***ITEM STATISTICS***

| | *MEAN* | *STD. DEVIATION* | *N* |
|---|---|---|---|
| **Comprar estes produtos aumenta a minha auto-estima.** | 3,66 | 2,005 | 29 |
| **Optar por estes produtos traz-me satisfação pessoal.** | 4,31 | 1,984 | 29 |
| **Estes produtos melhoram a imagem que tenho de mim próprio.** | 3,93 | 1,999 | 29 |
| **Escolher estes produtos dá-me uma sensação de maior aceitação por parte dos outros.** | 2,90 | 1,934 | 29 |

***ITEM-TOTAL STATISTICS***

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **Comprar estes produtos aumenta a minha auto-estima.** | 11,14 | 28,623 | 0,870 | 0,872 | 0,888 |
| **Optar por estes produtos traz-me satisfação pessoal.** | 10,48 | 28,401 | ,897 | 0,916 | 0,879 |
| **Estes produtos melhoram a imagem que tenho de mim próprio.** | 10,86 | 29,409 | 0,826 | 0,813 | 0,904 |
| **Escolher estes produtos dá-me uma sensação de maior aceitação por parte dos outros.** | 11,90 | 31,882 | 0,719 | 0,619 | 0,938 |

*SCALE STATISTICS*

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 14,79 | 51,313 | 7,163 | 4 |

**Individualism/Collectivism**

*RELIABILITY STATISTICS*

| *CRONBACH'S ALPHA* | *CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS* | *N OF ITEMS* |
|---|---|---|
| 0,914 | 0,917 | 6 |

*ITEM STATISTICS*

| | *MEAN* | *STD. DEVIATION* | *N* |
|---|---|---|---|
| **As pessoas devem sacrificar os seus interesses pessoais pelos interesses do seu grupo.** | 4,41 | 1,350 | 29 |
| **As pessoas devem preferir os interesses do grupo mesmo que isso implique passar por dificuldades.** | 3,86 | 1,529 | 29 |
| **O bem-estar do grupo é mais importante que a recompensa individual.** | 4,55 | 1,478 | 29 |
| **O sucesso do grupo é mais importante que o sucesso individual.** | 4,55 | 1,404 | 29 |
| **As pessoas deverão apenas procurar atingir os seus objectivos pessoais depois de considerarem o bem-estar do grupo.** | 4,00 | 1,535 | 29 |
| **O sentimento de lealdade ao grupo deve ser encorajado mesmo que os objectivos individuais sejam afectados.** | 4,07 | 1,361 | 29 |

*ITEM-TOTAL STATISTICS*

| | *SCALE MEAN IF ITEM DELETED* | *SCALE VARIANCE IF ITEM DELETED* | *CORRECTED ITEM-TOTAL CORRELATION* | *SQUARED MULTIPLE CORRELATION* | *CRONBACH'S ALPHA IF ITEM DELETED* |
|---|---|---|---|---|---|
| **As pessoas devem sacrificar os seus interesses pessoais pelos interesses do seu grupo.** | 21,03 | 36,892 | 0,843 | 0,810 | 0,887 |
| **As pessoas devem preferir os interesses do grupo mesmo que isso implique passar por dificuldades.** | 21,59 | 38,108 | 0,641 | 0,703 | 0,916 |
| **O bem-estar do grupo é mais importante que a recompensa individual.** | 20,90 | 35,096 | 0,871 | 0,891 | 0,882 |
| **O sucesso do grupo é mais importante que o sucesso individual.** | 20,90 | 36,096 | 0,858 | 0,879 | 0,885 |
| **As pessoas deverão apenas procurar atingir os seus objectivos pessoais depois de considerarem o bem-estar do grupo.** | 21,45 | 39,256 | 0,568 | 0,522 | 0,926 |

| | | | | | |
|---|---|---|---|---|---|
| **O sentimento de lealdade ao grupo deve ser encorajado mesmo que os objectivos individuais sejam afectados.** | 21,38 | 37,244 | 0,809 | 0,729 | 0,892 |

***SCALE STATISTICS***

| *MEAN* | *VARIANCE* | *STD. DEVIATION* | *N OF ITEMS* |
|---|---|---|---|
| 25,45 | 52,542 | 7,249 | 6 |

**The higher ECA is the higher GPB will be.**

Simple Linear Regression

Dependent Variable: Green Purchase Behaviour.

Independent Variables: Environmental Concern Attitudes

***MODEL SUMMARY[b]***

| *MODEL* | *R* | *R SQUARE* | *ADJUSTED R SQUARE* | *STD. ERROR OF THE ESTIMATE* | *DURBIN-WATSON* |
|---|---|---|---|---|---|
| 1 | 0,398[a] | 0,159 | 0,127 | 1,0115 | 1,459 |

a. Predictors: (Constant), ECA

b. Dependent Variable: GPB

**COEFFICIENTS[a]**

| *MODEL* | | *UNSTANDARDIZED COEFFICIENTS* | | *STANDARDIZED COEFFICIENTS* | *T* | *SIG.* | *COLLINEARITY STATISTICS* | |
|---|---|---|---|---|---|---|---|---|
| | | *B* | *STD. ERROR* | *BETA* | | | *TOLERANCE* | *VIF* |
| 1 | (Constant) | 2,218 | 1,317 | | 1,684 | 0,104 | | |
| | ECA | 0,516 | 0,229 | 0,398 | 2,256 | 0,032 | 1,000 | 1,000 |

a. Dependent Variable: GPB

**Financial Perceived Risks (price) negatively impact Green Purchase Behaviour.**

Simple Multiple Regression

Dependent Variable: Green Purchase Behaviour;

Independent Variables: Financial Perceived Risks

***MODEL SUMMARY[b]***

| *MODEL* | *R* | *R SQUARE* | *ADJUSTED R SQUARE* | *STD. ERROR OF THE ESTIMATE* | *DURBIN-WATSON* |
|---|---|---|---|---|---|
| 1 | 0,066[a] | 0,004 | -0,032 | 1,1003 | 1,730 |

a. Predictors: (Constant), FIN

b. Dependent Variable: GPB

**COEFFICIENTS[a]**

| *MODEL* | | *UNSTANDARDIZED COEFFICIENTS* | | *STANDARDIZED COEFFICIENTS* | *T* | *SIG.* | *COLLINEARITY STATISTICS* | |
|---|---|---|---|---|---|---|---|---|
| | | *B* | *STD. ERROR* | *BETA* | | | *TOLERANCE* | *VIF* |
| 1 | (Constant) | 5,479 | 0,951 | | 5,764 | ,000 | | |
| | FIN | -0,063 | 0,182 | -0,066 | -0,345 | 0,733 | 1,000 | 1,000 |

a. Dependent Variable: GPB

**Physical risks (good for health) positively impact Green Purchase Behaviour.**

Linear Multiple Regression

Dependent Variable: Green Purchase Behaviour;

Independent Variables: Physical Perceived Risks,

**MODEL SUMMARY[b]**

| *MODEL* | *R* | *R SQUARE* | *ADJUSTED R SQUARE* | *STD. ERROR OF THE ESTIMATE* | *DURBIN-WATSON* |
|---|---|---|---|---|---|
| 1 | 9,455[a] | 9,207 | 9,178 | 9,9818 | 1,654 |

a. Predictors: (Constant), PHY

b. Dependent Variable: GPB

**COEFFICIENTS[a]**

| MODEL | | UNSTANDARDIZED COEFFICIENTS | | STANDARDIZED COEFFICIENTS | T | SIG. | COLLINEARITY STATISTICS | |
|---|---|---|---|---|---|---|---|---|
| | | B | STD. ERROR | BETA | | | TOLERANCE | VIF |
| 1 | (Constant) | 2,697 | 0,944 | | 2,856 | 0,008 | | |
| | PHY | 0,441 | 9,166 | 9,455 | 2,656 | 0,013 | 1,000 | 1,000 |

a. Dependent Variable: GPB

**Performance Perceived Risks have a negative impact in Green Purchase Behaviour**

Simple Linear Regression

Dependent Variable: Green Purchase Behaviour;

Independent Variables: Performance Perceived Risks;

**MODEL SUMMARY[b]**

| MODEL | R | R SQUARE | ADJUSTED R SQUARE | STD. ERROR OF THE ESTIMATE | DURBIN-WATSON |
|---|---|---|---|---|---|
| 1 | 0,457[a] | 0,209 | 0,180 | 0,9806 | 1,801 |

a. Predictors: (Constant), PER

b. Dependent Variable: GPB

**COEFFICIENTS[a]**

| MODEL | | UNSTANDARDIZED COEFFICIENTS | | STANDARDIZED COEFFICIENTS | T | SIG. | COLLINEARITY STATISTICS | |
|---|---|---|---|---|---|---|---|---|
| | | B | STD. ERROR | BETA | | | TOLERANCE | VIF |
| 1 | (Constant) | 2,950 | 0,846 | | 3,486 | 0,002 | | |
| | PER | 0,463 | 0,173 | 0,457 | 2,672 | 0,013 | 1,000 | 1,000 |

a. Dependent Variable: GPB

**Convenience Perceived Risks have a negative impact in Green Purchase Behaviour**

Simple Linear Regression

Dependent Variable: Green Purchase Behaviour;

Independent Variables: Convenience Perceived Risks

**MODEL SUMMARY[b]**

| *MODEL* | *R* | *R SQUARE* | *ADJUSTED R SQUARE* | *STD. ERROR OF THE ESTIMATE* | *DURBIN-WATSON* |
|---|---|---|---|---|---|
| 1 | 0,354[a] | 0,125 | 0,093 | 1,0314 | 1,558 |

a. Predictors: (Constant), CON

b. Dependent Variable: GPB

**Coefficients[a]**

| *MODEL* | *UNSTANDARDIZED COEFFICIENTS* | | *STANDARDIZED COEFFICIENTS* | *T* | *SIG.* | *COLLINEARITY STATISTICS* | |
|---|---|---|---|---|---|---|---|
| | *B* | *STD. ERROR* | *BETA* | | | *TOLERANCE* | *VIF* |
| (Constant) | 3,554 | 0,839 | | 4,238 | 0,000 | | |
| CON | 0,347 | 0,176 | 0,354 | 1,965 | 0,060 | 1,000 | 1,000 |

a. Dependent Variable: GPB

**Social Perceived Risks have a positive impact in Green Purchase Behaviour**

Simple Linear Regression

Dependent Variable: Green Purchase Behaviour;

Independent Variables: Social Perceived Risks

***MODEL SUMMARY[b]***

| *MODEL* | *R* | *R SQUARE* | *ADJUSTED R SQUARE* | *STD. ERROR OF THE ESTIMATE* | *DURBIN-WATSON* |
|---|---|---|---|---|---|
| 1 | 0,393[a] | 0,154 | 0,123 | 1,0142 | 1,879 |

a. Predictors: (Constant), SOC

b. Dependent Variable: GPB

**Coefficients[a]**

| MODEL | | UNSTANDARDIZED COEFFICIENTS | | STANDARDIZED COEFFICIENTS | T | SIG. | COLLINEARITY STATISTICS | |
|---|---|---|---|---|---|---|---|---|
| | | B | STD. ERROR | BETA | | | TOLERANCE | VIF |
| 1 | (Constant) | 4,184 | 0,478 | | 8,749 | 0,000 | | |
| | SOC | 0,270 | 0,122 | 0,393 | 2,218 | 0,035 | 1,000 | 1,000 |

a. Dependent Variable: GPB

**Psychological Perceived Risks have a positive impact in Green Purchase Behaviour**

Simple Linear Regression

Dependent Variable: Green Purchase Behaviour;

Independent Variables: Psychological Perceived Risks

**MODEL SUMMARY[b]**

| MODEL | R | R SQUARE | ADJUSTED R SQUARE | STD. ERROR OF THE ESTIMATE | DURBIN-WATSON |
|---|---|---|---|---|---|
| 1 | 0,390[a] | 0,152 | 0,121 | 1,0153 | 1,848 |

a. Predictors: (Constant), PSY

b. Dependent Variable: GPB

**COEFFICIENTS[a]**

| MODEL | | UNSTANDARDIZED COEFFICIENTS | | STANDARDIZED COEFFICIENTS | T | SIG. | COLLINEARITY STATISTICS | |
|---|---|---|---|---|---|---|---|---|
| | | B | STD. ERROR | BETA | | | TOLERANCE | VIF |
| 1 | (Constant) | 4,286 | 0,439 | | 9,768 | 0,000 | | |
| | PSY | 0,236 | 0,107 | 0,390 | 2,202 | 0,036 | 1,000 | 1,000 |

a. Dependent Variable: GPB

**Colectivism has a positive relation with Green Purchase Behaviour**

Simple Linear Regression

Dependent Variable: Green Purchase Behaviour;

Independent Variables: Colectivism

**MODEL SUMMARY[b]**

| *MODEL* | *R* | *R SQUARE* | *ADJUSTED R SQUARE* | *STD. ERROR OF THE ESTIMATE* | *DURBIN-WATSON* |
|---|---|---|---|---|---|
| 1 | 0,022[a] | 0,001 | -0,037 | 1,1024 | 1,729 |

a. Predictors: (Constant), COL

b. Dependent Variable: GPB

**COEFFICIENTS[a]**

| *MODEL* | | *UNSTANDARDIZED COEFFICIENTS* | | *STANDARDIZED COEFFICIENTS* | *T* | *SIG.* | *COLLINEARITY STATISTICS* | |
|---|---|---|---|---|---|---|---|---|
| | | *B* | *STD. ERROR* | *BETA* | | | *TOLERANCE* | *VIF* |
| 1 | (Constant) | 5,073 | 0,760 | | 6,679 | 0,000 | | |
| | COL | 0,020 | 0,172 | 0,022 | 0,117 | 0,908 | 1,000 | 1,000 |

a. Dependent Variable: GPB

**Sample**

**GENDER**

| | | *FREQUENCY* | *PERCENT* | *VALID PERCENT* | *CUMULATIVE PERCENT* |
|---|---|---|---|---|---|
| **Valid** | **Masculino** | 11 | 37,9 | 37,9 | 37,9 |
| | **Feminino** | 18 | 62,1 | 62,1 | 100,0 |
| | **Total** | 29 | 100,0 | 100,0 | |

**AGE**

| | *FREQUENCY* | *PERCENT* | *VALID PERCENT* | *CUMULATIVE PERCENT* |
|---|---|---|---|---|
| **23** | 1 | 3,4 | 3,4 | 3,4 |
| **24** | 3 | 10,3 | 10,3 | 13,8 |
| **25** | 4 | 13,8 | 13,8 | 27,6 |
| **26** | 1 | 3,4 | 3,4 | 31,0 |
| **28** | 1 | 3,4 | 3,4 | 34,5 |
| **29** | 2 | 6,9 | 6,9 | 41,4 |
| **32** | 1 | 3,4 | 3,4 | 44,8 |
| **33** | 3 | 10,3 | 10,3 | 55,2 |
| **34** | 4 | 13,8 | 13,8 | 69,0 |
| **35** | 3 | 10,3 | 10,3 | 79,3 |
| **37** | 1 | 3,4 | 3,4 | 82,8 |
| **38** | 2 | 6,9 | 6,9 | 89,7 |
| **40** | 1 | 3,4 | 3,4 | 93,1 |
| **45** | 1 | 3,4 | 3,4 | 96,6 |
| **46** | 1 | 3,4 | 3,4 | 100,0 |
| **Total** | 29 | 100,0 | 100,0 | |

**LITERACY**

| | *FREQUENCY* | *PERCENT* | *VALID PERCENT* | *CUMULATIVE PERCENT* |
|---|---|---|---|---|
| **1º ciclo (Primária)** | 1 | 3,4 | 3,4 | 3,4 |
| **Secundário (equivalente ao 12º ano actual)** | 5 | 17,2 | 17,2 | 20,7 |
| **Licenciatura** | 9 | 31,0 | 31,0 | 51,7 |
| **Mestrado** | 13 | 44,8 | 44,8 | 96,6 |
| **Doutoramento** | 1 | 3,4 | 3,4 | 100,0 |
| **Total** | 29 | 100,0 | 100,0 | |

**HOUSEHOLD INCOME**

| | *FREQUENCY* | *PERCENT* | *VALID PERCENT* | *CUMULATIVE PERCENT* |
|---|---|---|---|---|
| **Até 1000 €** | 5 | 17,2 | 17,2 | 17,2 |
| **1001-1500 €** | 5 | 17,2 | 17,2 | 34,5 |
| **1501-2000 €** | 5 | 17,2 | 17,2 | 51,7 |
| **2001-2500 €** | 4 | 13,8 | 13,8 | 65,5 |
| **2501-3000 €** | 4 | 13,8 | 13,8 | 79,3 |
| **3001-3500€** | 2 | 6,9 | 6,9 | 86,2 |
| **Mais de 3500 €** | 4 | 13,8 | 13,8 | 100,0 |
| **Total** | 29 | 100,0 | 100,0 | |

SCHOOL OF ECONOMICS & MANAGEMENT LISBON

U LISBOA | UNIVERSIDADE DE LISBOA

English

Este questionário tem como objectivo estudar a compra de produtos verdes/amigos do ambiente, no âmbito de uma tese de Doutoramento em Marketing.

Todos os dados recolhidos são anónimos e confidenciais.

**O seu contributo é muito importante para este estudo!**

O conjunto de questões que se segue avalia a sua perspectiva sobre a relação entre o Homem e a Natureza.

Indique, por favor, em que medida cada uma das seguintes frases traduz a sua opinião e atitude em relação a este tema.

Por favor, tente ser o mais objectivo possível ao assinalar a opção que melhor se adeqúa numa escala que vai de "discordo totalmente" (1) a "concordo totalmente" (7).

| | Discordo Totalmente | Discordo em grande parte | Discordo em parte | Não Concordo nem Discordo | Concordo em parte | Concordo em grande parte | Concordo Totalmente |
|---|---|---|---|---|---|---|---|
| Estou preocupado com o ambiente. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Estaria disposto a reduzir os meus padrões de consumo para proteger o ambiente. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Seria capaz de doar algum dinheiro para contribuir para a protecção de animais selvagens. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Pedi à minha família para reciclar alguns dos produtos que utilizamos. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Tenho intenção de alterar os meus padrões de consumo para proteger o ambiente. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

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SCHOOL OF ECONOMICS & MANAGEMENT LISBON

U LISBOA | UNIVERSIDADE DE LISBOA

English

O conjunto de questões que se seguem referem-se a **produtos "amigos do ambiente" que tipicamente são adquiridos em supermercado**, como por exemplo:

- Fruta e verdura biológica;
- Bebidas sem corantes nem conservantes e com ingredientes naturais;
- Champôs/desodorizantes/cremes de corpo com ingredientes naturais, sem parabenos, não testados em animais;
- Detergentes sem fosfatos e solventes agressivos, etc.

Indique, por favor, o seu grau de concordância com as seguintes afirmações numa escala que vai de "discordo totalmente" (1) a "concordo totalmente" (7).

| | Discordo Totalmente | Discordo em grande parte | Discordo em parte | Não concordo nem Discordo | Concordo em parte | Concordo em grande parte | ConcordoTotalmente |
|---|---|---|---|---|---|---|---|
| Compro produtos "amigos do ambiente" sempre que possível. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Compro produtos biológicos sempre que possível. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Utilizo produtos feitos de materiais reciclados sempre que possível. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Tenho a preocupação de reduzir o desperdício em casa sempre que possível. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Tento reciclar o desperdício em casa sempre que possível. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

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SCHOOL OF ECONOMICS & MANAGEMENT LISBON

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English

Indique, por favor, o seu grau de concordância com as seguintes afirmações numa escala que vai de "discordo totalmente" (1) a "concordo totalmente" (7).

Na sua opinião, os produtos "amigos do ambiente"...

| | DiscordoTotalmente | Discordo em grande parte | Discordo em parte | Não Concordo nem Discordo | Concordo em parte | Concordo em grande parte | Concordo Totalmente |
|---|---|---|---|---|---|---|---|
| São caros em relação aos produtos que não são ecológicos. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Normalmente é necessário pagar mais por estes produtos. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Estes produtos têm um preço elevado mesmo tendo em conta o seu valor. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Estes produtos são bons para a minha saúde. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Existem menos efeitos secundários para a minha saúde quando uso/consumo estes produtos. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | DiscordoTotalmente | Discordo em grande parte | Discordo em parte | Não Concordo nem Discordo | Concordo em parte | Concordo em grande parte | Concordo Totalmente |
|---|---|---|---|---|---|---|---|
| Estes produtos são melhores para a minha saúde que os normais. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Os produtos amigos do ambiente são de qualidade superior em comparação com os normais. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Estes produtos são mais eficientes que os normais. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Estes produtos são mais eficazes que os normais. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Indique, por favor, o seu grau de concordância com as seguintes afirmações numa escala que vai de "discordo totalmente" (1) a "concordo totalmente" (7).

Na sua opinião...

| | Discordo Totalmente | Discordo em grande parte | Discordo em parte | Não concordo nem discordo | Concordo em parte | Concordo em grande parte | Concordo Totalmente |
|---|---|---|---|---|---|---|---|
| Estes produtos muitas vezes são difíceis de encontrar à venda. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Normalmente, tenho que procurar estes produtos em diversas lojas até os encontrar. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Estes produtos são difíceis de encontrar dentro da própria loja. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Perco algum tempo na loja antes de comprá-los, pois primeiro há quer ler a informação e compará-los. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | Discordo Totalmente | Discordo em grande parte | Discordo em parte | Não concordo nem discordo | Concordo em parte | Concordo em grande parte | Concordo Totalmente |
|---|---|---|---|---|---|---|---|
| Comprar estes produtos aumenta a minha auto-estima. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Optar por estes produtos traz-me satisfação pessoal. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Escolher estes produtos dá-me uma sensação de maior aceitação por parte dos outros. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Estes produtos melhoram a imagem que tenho de mim próprio. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | Discordo Totalmente | Discordo em grande parte | Discordo em parte | Não concordo nem discordo | Concordo em parte | Concordo em grande parte | Concordo Totalmente |
|---|---|---|---|---|---|---|---|
| As outras pessoas reagem positivamente quando sabem que compro estes produtos. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Acredito que ao comprar estes produtos tem impacto positivo para a minha imagem na sociedade. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Optar por estes produtos contribui para uma melhoria da imagem que os outros têm a meu respeito. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

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English

Indique, por favor, o seu grau de concordância em relação aos seus **valores culturais aplicados ao seu contexto** (grupo de amigos, de trabalho ou núcleo familiar), numa escala que vai de "discordo totalmente" (1) a "concordo totalmente" (7).

| | Discordo Totalmente | Discordo em grande parte | Discordo em parte | Não Concordo nem Discordo | Concordo em parte | Concordo em grande parte | Concordo Totalmente |
|---|---|---|---|---|---|---|---|
| As pessoas devem sacrificar os seus interesses pessoais pelos interesses do seu grupo. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| As pessoas devem preferir os interesses do grupo mesmo que isso implique passar por dificuldades. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| O bem-estar do grupo é mais importante que a recompensa individual. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| O sucesso do grupo é mais importante que o sucesso individual. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| As pessoas deverão apenas procurar atingir os seus objectivos pessoais depois de considerarem o bem-estar do grupo. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| O sentimento de lealdade ao grupo deve ser encorajado mesmo que os objectivos individuais sejam afectados. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

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Sexo:

- Masculino
- Feminino

Qual a sua idade? (exemplo: 32)

Nº Pessoas do seu agregado familiar (que vivem consigo e incluindo o próprio):

Nº de Filhos (dependentes):

Escolaridade:

- 1º ciclo (Primária)
- 2º ciclo (equivalente ao 6º ano actual)
- 3º ciclo (equivalente ao 9º ano actual)
- Secundário (equivalente ao 12º ano actual)
- Licenciatura
- Mestrado
- Doutoramento

Rendimento mensal líquido das pessoas que vivem em sua casa (no total):

- Até 1000 €
- 1001-1500 €
- 1501-2000 €
- 2001-2500 €
- 2501-3000 €
- 3001-3500€
- Mais de 3500 €

Qual das seguintes descrições se aproxima mais do que sente relativamente ao rendimento actual das pessoas que vivem em sua casa?

- O rendimento actual permite viver confortavelmente.
- O rendimento actual dá para viver.
- É difícil viver com o rendimento actual.
- É muito difícil viver com o rendimento actual.
- O rendimento actual não dá para viver.

País onde vive:

- Portugal
- Espanha

(Opcional) Caso pretenda receber as conclusões desta investigação, deixe, por favor, o endereço de e-mail para onde pretende que o mesmo seja enviado:

>>

## APPENDIX 4|
## MODEL FIT SUMMARY – FIRST CONFIRMATORY MODEL

**CMIN**

| *MODEL* | *NPAR* | *CMIN* | *DF* | *P* | *CMIN/DF* |
|---|---|---|---|---|---|
| **Default model** | 77 | 2350,240 | 419 | 0,000 | 5,609 |
| **Saturated model** | 496 | 0,000 | 0 | | |
| **Independence model** | 31 | 15620,451 | 465 | 0,000 | 33,592 |

**RMR, GFI**

| *MODEL* | *RMR* | *GFI* | *AGFI* | *PGFI* |
|---|---|---|---|---|
| **Default model** | 0,109 | 0,808 | 0,773 | 0,683 |
| **Saturated model** | 0,000 | 1,000 | | |
| **Independence model** | 0,579 | 0,261 | 0,212 | 0,245 |

**BASELINE COMPARISONS**

| *MODEL* | *NFI DELTA1* | *RFI RHO1* | *IFI DELTA2* | *TLI RHO2* | *CFI* |
|---|---|---|---|---|---|
| **Default model** | 0,850 | 0,833 | 0,873 | 0,859 | 0,873 |
| **Saturated model** | 1,000 | | 1,000 | | 1,000 |
| **Independence model** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |

**PARSIMONY-ADJUSTED MEASURES**

| *MODEL* | *PRATIO* | *PNFI* | *PCFI* |
|---|---|---|---|
| **Default model** | 0,901 | 0,766 | 0,786 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | **1,000** | **,000** | **,000** |

**NCP**

| *MODEL* | *NCP* | *LO 90* | *HI 90* |
|---|---|---|---|
| **Default model** | 1931,240 | 1782,707 | 2087,221 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 15155,451 | 14750,546 | 15566,697 |

**FMIN**

| *MODEL* | *FMIN* | *F0* | *LO 90* | *HI 90* |
|---|---|---|---|---|
| **Default model** | 3,202 | 2,631 | 2,429 | 2,844 |
| **Saturated model** | 0,000 | 0,000 | 0,000 | 0,000 |
| **Independence model** | 21,281 | 20,648 | 20,096 | 21,208 |

**RMSEA**

| *MODEL* | *RMSEA* | *LO 90* | *HI 90* | *PCLOSE* |
|---|---|---|---|---|
| **Default model** | 0,079 | 0,076 | 0,082 | 0,000 |
| **Independence model** | 0,211 | 0,208 | 0,214 | 0,000 |

**AIC**

| *MODEL* | *AIC* | *BCC* | *BIC* | *CAIC* |
|---|---|---|---|---|
| **Default model** | 2504,240 | 2511,260 | 2858,430 | 2935,430 |
| **Saturated model** | 992,000 | 1037,219 | 3273,536 | 3769,536 |
| **Independence model** | 15682,451 | 15685,277 | 15825,047 | 15856,047 |

**ECVI**

| *MODEL* | *ECVI* | *LO 90* | *HI 90* | *MECVI* |
|---|---|---|---|---|
| **Default model** | 3,412 | 3,209 | 3,624 | 3,421 |
| **Saturated model** | 1,351 | 1,351 | 1,351 | 1,413 |
| **Independence model** | 21,366 | 20,814 | 21,926 | 21,370 |

**HOELTER**

| *MODEL* | *HOELTER .05* | *HOELTER .01* |
|---|---|---|
| Default model | 147 | 153 |
| Independence model | 25 | 26 |

## APPENDIX 5|
## MODEL FIT SUMMARY – FIRST CONFIRMATORY REESPECIFIED MODEL

**CMIN**

| *MODEL* | *NPAR* | *CMIN* | *DF* | *P* | *CMIN/DF* |
|---|---|---|---|---|---|
| **Default model** | 65 | 915,330 | 260 | ,000 | 3,520 |
| **Saturated model** | 325 | 0,000 | 0 | | |
| **Independence model** | 25 | 11540,668 | 300 | ,000 | 38,469 |

**RMR, GFI**

| *MODEL* | *RMR* | *GFI* | *AGFI* | *PGFI* |
|---|---|---|---|---|
| **Default model** | 0,096 | 0,902 | 0,878 | 0,722 |
| **Saturated model** | 0,000 | 1,000 | | |
| **Independence model** | 0,593 | 0,296 | 0,237 | 0,273 |

**Baseline Comparisons**

| *MODEL* | *NFI DELTA1* | *RFI RHO1* | *IFI DELTA2* | *TLI RHO2* | *CFI* |
|---|---|---|---|---|---|
| **Default model** | ,921 | ,908 | 0,942 | 0,933 | 0,942 |
| **Saturated model** | 1,000 | | 1,000 | | 1,000 |
| **Independence model** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |

**PARSIMONY-ADJUSTED MEASURES**

| *MODEL* | *PRATIO* | *PNFI* | *PCFI* |
|---|---|---|---|
| **Default model** | 0,867 | 0,798 | 0,816 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 1,000 | 0,000 | 0,000 |

**NCP**

| *MODEL* | *NCP* | *LO 90* | *HI 90* |
|---|---|---|---|
| **Default model** | 655,330 | 566,892 | 751,344 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 11240,668 | 10892,742 | 11594,927 |

**FMIN**

| *MODEL* | *FMIN* | *F0* | *LO 90* | *HI 90* |
|---|---|---|---|---|
| **Default model** | 1,247 | ,893 | ,772 | 1,024 |
| **Saturated model** | 0,000 | 0,000 | 0,000 | 0,000 |
| **Independence model** | 15,723 | 15,314 | 14,840 | 15,797 |

**RMSEA**

| *MODEL* | *RMSEA* | *LO 90* | *HI 90* | *PCLOSE* |
|---|---|---|---|---|
| **Default model** | 0,059 | 0,055 | 0,063 | 0,000 |
| **Independence model** | 0,226 | 0,222 | 0,229 | 0,000 |

**AIC**

| *MODEL* | *AIC* | *BCC* | *BIC* | *CAIC* |
|---|---|---|---|---|
| **Default model** | 1045,330 | 1050,104 | 1344,321 | 1409,321 |
| **Saturated model** | 650,000 | 673,870 | 2144,958 | 2469,958 |
| **Independence model** | 11590,668 | 11592,504 | 11705,664 | 11730,664 |

**ECVI**

| *MODEL* | *ECVI* | *LO 90* | *HI 90* | *MECVI* |
|---|---|---|---|---|
| **Default model** | 1,424 | 1,304 | 1,555 | 1,431 |
| **Saturated model** | 0,886 | 0,886 | 0,886 | 0,918 |
| **Independence model** | 15,791 | 15,317 | 16,274 | 15,794 |

**HOELTER**

| *MODEL* | *HOELTER .05* | *HOELTER .01* |
|---|---|---|
| **Default model** | 240 | 254 |
| **Independence model** | 22 | 23 |

## APPENDIX 6|
## MODEL FIT SUMMARY –CONFIRMATORY MODEL (SEM) FOR H1

**CMIN**

| *MODEL* | *NPAR* | *CMIN* | *DF* | *P* | *CMIN/DF* |
|---|---|---|---|---|---|
| **Default model** | 19 | 202,550 | 26 | 0,000 | 6,790 |
| **Saturated model** | 45 | 0,000 | 0 | | |
| **Independence model** | 9 | 3541,932 | 36 | 0,000 | 98,387 |

**RMR, GFI**

| *MODEL* | *RMR* | *GFI* | *AGFI* | *PGFI* |
|---|---|---|---|---|
| **Default model** | 0,093 | 0,940 | 0,896 | 0,543 |
| **Saturated model** | 0,000 | 1,000 | | |
| **Independence model** | 0,842 | 0,334 | 0,168 | 0,267 |

**BASELINE COMPARISONS**

| *MODEL* | *NFI DELTA1* | *RFI RHO1* | *IFI DELTA2* | *TLI RHO2* | *CFI* |
|---|---|---|---|---|---|
| **Default model** | 0,943 | 0,921 | 0,950 | 0,930 | 0,950 |
| **Saturated model** | 1,000 | | 1,000 | | 1,000 |
| **Independence model** | 0,000 | 0,000 | 0000 | 0,000 | 0,000 |

**PARSIMONY-ADJUSTED MEASURES**

| *MODEL* | *PRATIO* | *PNFI* | *PCFI* |
|---|---|---|---|
| **Default model** | 0,722 | 0,681 | 0,686 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 1,000 | 0,000 | 0,000 |

**NCP**

| *MODEL* | *NCP* | *LO 90* | *HI 90* |
|---|---|---|---|
| **Default model** | 176,550 | 134,942 | 225,642 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 3505,932 | 3314,214 | 3704,932 |

**FMIN**

| *MODEL* | *FMIN* | *F0* | *LO 90* | *HI 90* |
|---|---|---|---|---|
| **Default model** | 0,276 | 0,241 | 0,184 | 0,307 |
| **Saturated model** | 0,000 | 0,000 | 0,000 | 0,000 |
| **Independence model** | 4,826 | 4,776 | 4,515 | 5,048 |

**RMSEA**

| *MODEL* | *RMSEA* | *LO 90* | *HI 90* | *PCLOSE* |
|---|---|---|---|---|
| **Default model** | 0,086 | 0,084 | 0,109 | 0,000 |
| **Independence model** | 0,364 | 0,354 | 0,374 | 0,000 |

**AIC**

| *MODEL* | *AIC* | *BCC* | *BIC* | *CAIC* |
|---|---|---|---|---|
| **Default model** | 240,550 | 241,075 | 327,948 | 346,948 |
| **Saturated model** | 90,000 | 91,243 | 296,994 | 341,994 |
| **Independence model** | 3559,932 | 3560,181 | 3601,331 | 3610,331 |

**ECVI**

| *MODEL* | *ECVI* | *LO 90* | *HI 90* | *MECVI* |
|---|---|---|---|---|
| **Default model** | 0,328 | 0,271 | 0,395 | 0,328 |
| **Saturated model** | 0,123 | 0,123 | 0,123 | 0,124 |
| **Independence model** | 4,850 | 4,589 | 5,121 | 4,850 |

**HOELTER**

| *MODEL* | *HOELTER .05* | *HOELTER .01* |
|---|---|---|
| **Default model** | 141 | 166 |
| **Independence model** | 11 | 13 |

## APPENDIX 7|
## MODEL FIT SUMMARY –CONFIRMATORY MODEL(SEM) FOR H2

**CMIN**

| *MODEL* | *NPAR* | *CMIN* | *DF* | *P* | *CMIN/DF* |
|---|---|---|---|---|---|
| **Default model** | 57 | 984,613 | 268 | 0,000 | 3,674 |
| **Saturated model** | 325 | 0,000 | 0 | | |
| **Independence model** | 25 | 11540,668 | 300 | 0,000 | 38,469 |

**RMR, GFI**

| *MODEL* | *RMR* | *GFI* | *AGFI* | *PGFI* |
|---|---|---|---|---|
| **Default model** | 0,122 | 0,897 | 0,875 | 0,740 |
| **Saturated model** | 0,000 | 1,000 | | |
| **Independence model** | 0,593 | 0,296 | 0,237 | 0,273 |

**BASELINE COMPARISONS**

| *MODEL* | *NFI DELTA1* | *RFI RHO1* | *IFI DELTA2* | *TLI RHO2* | *CFI* |
|---|---|---|---|---|---|
| **Default model** | 0,915 | 0,904 | 0,936 | 0,929 | 0936 |
| **Saturated model** | 1,000 | | 1,000 | | 1,000 |
| **Independence model** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |

**PARSIMONY-ADJUSTED MEASURES**

| *MODEL* | *PRATIO* | *PNFI* | *PCFI* |
|---|---|---|---|
| **Default model** | 0,893 | 0,817 | 0,836 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 1,000 | 0,000 | 0,000 |

**NCP**

| *MODEL* | *NCP* | *LO 90* | *HI 90* |
|---|---|---|---|
| **Default model** | 716,613 | 624,417 | 816,376 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 11240,668 | 10892,742 | 11594,927 |

**FMIN**

| *MODEL* | *FMIN* | *F0* | *LO 90* | *HI 90* |
|---|---|---|---|---|
| **Default model** | 1,341 | 0,976 | 0,851 | 1,112 |
| **Saturated model** | 0,000 | 0,000 | 0,000 | 0,000 |
| **Independence model** | 15,723 | 15,314 | 14,840 | 15,797 |

**RMSEA**

| *MODEL* | *RMSEA* | *LO 90* | *HI 90* | *PCLOSE* |
|---|---|---|---|---|
| **Default model** | 0,060 | 0,056 | 0,064 | 0,000 |
| **Independence model** | 0,226 | 0,222 | 0,229 | 0,000 |

**AIC**

| *MODEL* | *AIC* | *BCC* | *BIC* | *CAIC* |
|---|---|---|---|---|
| **Default model** | 1098,613 | 1102,799 | 1360,805 | 1417,805 |
| **Saturated model** | 650,000 | 673,870 | 2144,958 | 2469,958 |
| **Independence model** | 11590,668 | 11592,504 | 11705,664 | 11730,664 |

**ECVI**

| *MODEL* | *ECVI* | *LO 90* | *HI 90* | *MECVI* |
|---|---|---|---|---|
| **Default model** | 1,497 | 1,371 | 1,633 | 1,502 |
| **Saturated model** | 0,886 | 0,886 | 0,886 | 0,918 |
| **Independence model** | 15,791 | 15,317 | 16,274 | 15,794 |

**HOELTER**

| *MODEL* | *HOELTER .05* | *HOELTER .01* |
|---|---|---|
| **Default model** | 229 | 243 |
| **Independence model** | 22 | 23 |

## APPENDIX 8|
## MODEL FIT SUMMARY –CONFIRMATORY MODEL (SEM) FOR H3 (MODEL 0)

**CMIN**

| *MODEL* | *NPAR* | *CMIN* | *DF* | *P* | *CMIN/DF* |
|---|---|---|---|---|---|
| **Default model** | 114 | 1333,125 | 536 | 0,000 | 2,487 |
| **Saturated model** | 650 | 0,000 | 0 | | |
| **Independence model** | 50 | 11665,743 | 600 | 0,000 | 19,443 |

**RMR, GFI**

| *MODEL* | *RMR* | *GFI* | *AGFI* | *PGFI* |
|---|---|---|---|---|
| **Default model** | 0,131 | 0,869 | 0,841 | 0,717 |
| **Saturated model** | 0,000 | 1,000 | | |
| **Independence model** | 0,570 | 0,306 | 0,248 | 0,282 |

**BASELINE COMPARISONS**

| *MODEL* | *NFI DELTA1* | *RFI RHO1* | *IFI DELTA2* | *TLI RHO2* | *CFI* |
|---|---|---|---|---|---|
| **Default model** | 0,886 | 0,872 | 0,928 | 0,919 | 0,928 |
| **Saturated model** | 1,000 | | 1,000 | | 1,000 |
| **Independence model** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |

**PARSIMONY-ADJUSTED MEASURES**

| *MODEL* | *PRATIO* | *PNFI* | *PCFI* |
|---|---|---|---|
| **Default model** | 0,893 | 0,791 | 0,829 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 1,000 | 0,000 | 0,000 |

**NCP**

| *MODEL* | *NCP* | *LO 90* | *HI 90* |
|---|---|---|---|
| **Default model** | 797,125 | 693,564 | 908,357 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 11065,743 | 10718,230 | 11419,646 |

**FMIN**

| *MODEL* | *FMIN* | *F0* | *LO 90* | *HI 90* |
|---|---|---|---|---|
| **Default model** | 1,819 | 1,087 | 0,946 | 1,239 |
| **Saturated model** | 0,000 | 0,000 | 0,000 | 0,000 |
| **Independence model** | 15,915 | 15,097 | 14,622 | 15,579 |

**RMSEA**

| *MODEL* | *RMSEA* | *LO 90* | *HI 90* | *PCLOSE* |
|---|---|---|---|---|
| **Default model** | 0,045 | 0,042 | 0,048 | 0,997 |
| **Independence model** | 0,159 | 0,156 | 0,161 | 0,000 |

**AIC**

| *MODEL* | *AIC* | *BCC* | *BIC* | *CAIC* |
|---|---|---|---|---|
| **Default model** | 1561,125 | 1578,568 | | |
| **Saturated model** | 1300,000 | 1399,453 | | |
| **Independence model** | 11765,743 | 11773,393 | | |

**ECVI**

| *MODEL* | *ECVI* | *LO 90* | *HI 90* | *MECVI* |
|---|---|---|---|---|
| **Default model** | 2,130 | 1,988 | 2,282 | 2,154 |
| **Saturated model** | 1,774 | 1,774 | 1,774 | 1,909 |
| **Independence model** | 16,051 | 15,577 | 16,534 | 16,062 |

**HOELTER**

| *MODEL* | *HOELTER .05* | *HOELTER .01* |
|---|---|---|
| **Default model** | 326 | 340 |
| **Independence model** | 43 | 44 |

## APPENDIX 9|
## MODEL FIT SUMMARY –CONFIRMATORY MODEL (SEM) FOR H3 (MODEL 2)

**CMIN**

| *MODEL* | *NPAR* | *CMIN* | *DF* | *P* | *CMIN/DF* |
|---|---|---|---|---|---|
| **Unconstrained** | 114 | 1333,125 | 536 | 0,000 | 2,487 |
| **Model 1** | 96 | 1348,308 | 554 | 0,000 | 2,434 |
| **Model 2** | 89 | 1377,340 | 561 | 0,000 | 2,455 |
| **Model 3** | 114 | 1333,125 | 536 | 0,000 | 2,487 |
| **Model 4** | 114 | 1333,125 | 536 | 0,000 | 2,487 |
| **Model 5** | 114 | 1333,125 | 536 | 0,000 | 2,487 |
| **Saturated model** | 650 | 0,000 | 0 | | |
| **Independence model** | 50 | 11665,743 | 600 | 0,000 | 19,443 |

**RMR, GFI**

| *MODEL* | *RMR* | *GFI* | *AGFI* | *PGFI* |
|---|---|---|---|---|
| **Unconstrained** | 0,131 | 0,869 | 0,841 | 0,717 |
| **Model 1** | 0,134 | 0,868 | 0,845 | 0,740 |
| **Model 2** | 0,142 | 0,865 | 0,844 | 0,747 |
| **Model 3** | 0,131 | 0,869 | 0,841 | 0,717 |
| **Model 4** | 0,131 | 0,869 | 0,841 | 0,717 |
| **Model 5** | 0,131 | 0,869 | 0,841 | 0,717 |
| **Saturated model** | 0,000 | 1,000 | | |
| **Independence model** | 0,570 | 0,306 | 0,248 | 0,282 |

**BASELINE COMPARISONS**

| *MODEL* | *NFI DELTA1* | *RFI RHO1* | *IFI DELTA2* | *TLI RHO2* | *CFI* |
|---|---|---|---|---|---|
| **Unconstrained** | 0,886 | 0,872 | 0,928 | 0,919 | 0,928 |
| **Model 1** | 0,884 | 0,875 | 0,929 | 0,922 | 0,928 |
| **Model 2** | 0,882 | 0,874 | 0,926 | 0,921 | 0,926 |
| **Model 3** | 0,886 | 0,872 | 0,928 | 0,919 | 0,928 |
| **Model 4** | 0,886 | 0,872 | 0,928 | 0,919 | 0,928 |
| **Model 5** | 0,886 | 0,872 | 0,928 | 0,919 | 0,928 |
| **Saturated model** | 1,000 | | 1,000 | | 1,000 |
| **Independence model** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |

**PARSIMONY-ADJUSTED MEASURES**

| *MODEL* | *PRATIO* | *PNFI* | *PCFI* |
|---|---|---|---|
| **Unconstrained** | 0,893 | 0,791 | 0,829 |
| **Model 1** | 0,923 | 0,817 | 0,857 |
| **Model 2** | 0,935 | 0,825 | 0,866 |
| **Model 3** | 0,893 | 0,791 | 0,829 |
| **Model 4** | 0,893 | 0,791 | 0,829 |
| **Model 5** | 0,893 | 0,791 | 0,829 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 1,000 | 0,000 | 0,000 |

**NCP**

| *MODEL* | *NCP* | *LO 90* | *HI 90* |
|---|---|---|---|
| **Unconstrained** | 797,125 | 693,564 | 908,357 |
| **Model 1** | 794,308 | 690,437 | 905,855 |
| **Model 2** | 816,340 | 711,191 | 929,161 |
| **Model 3** | 797,125 | 693,564 | 908,357 |
| **Model 4** | 797,125 | 693,564 | 908,357 |
| **Model 5** | 797,125 | 693,564 | 908,357 |
| **Saturated model** | 0,000 | 0,000 | 0,000 |
| **Independence model** | 11065,743 | 10718,230 | 11419,646 |

**FMIN**

| *MODEL* | *FMIN* | *F0* | *LO 90* | *HI 90* |
|---|---|---|---|---|
| **Unconstrained** | 1,819 | 1,087 | 0,946 | 1,239 |
| **Model 1** | 1,839 | 1,084 | 0,942 | 1,236 |
| **Model 2** | 1,879 | 1,114 | 0,970 | 1,268 |
| **Model 3** | 1,819 | 1,087 | 0,946 | 1,239 |
| **Model 4** | 1,819 | 1,087 | 0,946 | 1,239 |
| **Model 5** | 1,819 | 1,087 | 0,946 | 1,239 |
| **Saturated model** | 0,000 | 0,000 | 0,000 | 0,000 |
| **Independence model** | 15,915 | 15,097 | 14,622 | 15,579 |

**RMSEA**

| *MODEL* | *RMSEA* | *LO 90* | *HI 90* | *PCLOSE* |
|---|---|---|---|---|
| **Unconstrained** | 0,045 | 0,042 | 0,048 | 0,997 |
| **Model 1** | 0,044 | 0,041 | 0,047 | 0,999 |
| **Model 2** | 0,045 | 0,042 | 0,048 | 0,999 |
| **Model 3** | 0,045 | 0,042 | 0,048 | 0,997 |
| **Model 4** | 0,045 | 0,042 | 0,048 | 0,997 |
| **Model 5** | 0,045 | 0,042 | 0,048 | 0,997 |
| **Independence model** | 0,159 | 0,156 | 0,161 | 0,000 |

**AIC**

| *MODEL* | *AIC* | *BCC* | *BIC* | *CAIC* |
|---|---|---|---|---|
| **Unconstrained** | 1561,125 | 1578,568 | | |
| **Model 1** | 1540,308 | 1554,997 | | |
| **Model 2** | 1555,340 | 1568,958 | | |
| **Model 3** | 1561,125 | 1578,568 | | |
| **Model 4** | 1561,125 | 1578,568 | | |
| **Model 5** | 1561,125 | 1578,568 | | |
| **Saturated model** | 1300,000 | 1399,453 | | |
| **Independence model** | 11765,743 | 11773,393 | | |

**ECVI**

| *MODEL* | *ECVI* | *LO 90* | *HI 90* | *MECVI* |
|---|---|---|---|---|
| **Unconstrained** | 2,130 | 1,988 | 2,282 | 2,154 |
| **Model 1** | 2,101 | 1,960 | 2,254 | 2,121 |
| **Model 2** | 2,122 | 1,978 | 2,276 | 2,140 |
| **Model 3** | 2,130 | 1,988 | 2,282 | 2,154 |
| **Model 4** | 2,130 | 1,988 | 2,282 | 2,154 |
| **Model 5** | 2,130 | 1,988 | 2,282 | 2,154 |
| **Saturated model** | 1,774 | 1,774 | 1,774 | 1,909 |
| **Independence model** | 16,051 | 15,577 | 16,534 | 16,062 |

**HOELTER**

| *MODEL* | *HOELTER .05* | *HOELTER .01* |
|---|---|---|
| **Unconstrained** | 326 | 340 |
| **Model 1** | 333 | 346 |
| **Model 2** | 330 | 343 |
| **Model 3** | 326 | 340 |
| **Model 4** | 326 | 340 |
| **Model 5** | 326 | 340 |
| **Independence model** | 43 | 44 |